PAISRA

THE STONE AGE SETTLEMENT OF BIHAR

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P.C. PANT • VIDULA JAYASWAL

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In the Platinum Jubilee Year of
our *alma mater*

We dedicate this monograph to

the BANARAS HINDU UNIVERSITY

and its founder

MAHĀMANĀ Pt. MADAN MOHAN MALAVIYA

P.C. Pant
Vidula Jayaswal

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Foreword

The present monograph provides an account of archaeological studies of the stone age site of Paisra which is situated in the midst of Kharagpur range in district Munger, Bihar. It was discovered by Drs. P.C. Pant and Vidula Jayaswal in November 1972. The site is in a valley close to the village of the same name and covers an area of about 2 square kilometers. Although some probing trenches were lain at that site in 1980, the regular excavation was started in 1984, which continued for four seasons upto 1988.

Excavations have revealed evidence for the settlement of two Stone Age cultures viz., the Acheulian and the Mesolithic.

The most significant feature of the Acheulian floors at Paisra is the structural remains, which are of two types. First, there are post-holes which appear to suggest the existence of temporary shelters supported by two posts, a type which is still constructed by the nomads of the Andaman Island. Second, there are several stone alignments of various sizes and forms associated with Acheulian floors. The straight and slightly curved stone alignments seem to indicate the presence of a camp site in which the stone blocks were placed in a row to hold down tent covers presumably of skin.

It may be noted that similar alignments of stones can still be observed in the deserted camp site of modern nomads.

The evidence for the structural remains of the Acheulians similar to that found at Paisra has not been known so far from any other site in the Indian sub-continent.

The tool types include handaxe (mainly lanceolate, Micoquian type), flake cleaver (occasional European type cleaver with bifacial working), a few side-scrapers, denticulate and notched tools. The blank detaching technique is mainly

Levallois. On technological and typological considerations, it appears to be an Advanced Acheulian culture, datable between 100,000 and 50,000 years B.P.

Details of excavations and basis of scientific study have been highlighted in the present monograph. It reflects a serious and thought-provoking study. Scholars of pre-history would find this monograph useful for further probes into the history of the dark period.

June 5, 1990

R.P. RASTOGI
VICE-CHANCELLOR
BANARAS HINDU UNIVERSITY

Preface

Although Stone Age studies started in the Indian sub-continent more than a century ago, most of the researches carried out so far have been limited to loose stratigraphic sequences and broad techno-typological screenings. This is particularly true in the case of Palaeolithic archaeology. In fact a researcher does not seem to have many options, since almost all the Palaeolithic sites have been found in secondary contexts. Implements of different phases occur either in cliff sections of the river valleys, or they have been obtained from factory sites mostly located in foot hills. In the case of the former, attempts have also been made to offer simplified interpretations of the paleo-environmental conditions, mostly ignoring the complexities involved in the formations of river sections. In this background the discovery of an Acheulian site in primary context at Paisra was indeed very heartening. In view of the importance of the site it was subjected to extensive excavations between 1984 and 1988. The present monograph is an account of the archaeological field investigations carried out at Paisra during this period.

Paisra is a unique Stone Age site of the Indian sub-continent in the sense that it has preserved evidence for extensive Acheulian habitation, the like of which has not been found anywhere so far. Two types of structural remains occur on the habitational floors which have also yielded a good number of Acheulian artefacts. First, there are post-holes which were obviously meant for thatched shelters of a temporary nature. And second, there is evidence for a number of stone alignments, either straight or somewhat curved, which were presumably placed to hold down covers made of sticks, leaves and grasses. (In the absence of animal remains, it is rather difficult to presume the existence of skin-covers). Unfortunately, the site has not preserved any organic remains, which could throw direct light on the subsistence patterns of the Acheulians in this part of the world. Nor it is possible to provide any absolute date to the culture. But on techno-typological grounds Paisra appears to represent an advanced Acheulian stage of the Indian sub-continent.

Another important feature of Paisra is the occurrence of Mesolithic occupation floors in certain localities. Although the evidence for the Mesolithic is of limited nature, yet Paisra remains the only site in the entire eastern India, where the radio-carbon determination for this phase is available.

Since we were concerned with the habitational floors of both the Acheulians and the Mesolithic people, special care was taken in exposing all the available evidence pertaining to these at a number of localities in the Paisra valley. After an extensive survey of the implementiferous areas, six localities (B to G) were selected for intensive investigations involving horizontal exposition of the tool-bearing floors and also cleaning and plotting of the naturally exposed habitational areas. Particular emphasis was laid on recording and plotting each and every detail of the evidence including finished tool-types, other artefact-types, lumps of raw material, rocks, natural stones, post-holes and other depressions of the habitational floors. Each artefact is numbered and its type recorded in abbreviated form on the plan of every trench, while techno-typological features have been shown in the corresponding table. The advantage of this type of meticulous recording is obvious. In this case, not only each artefact (if required even categories of artefacts) can be individually replaced on the plan, but it may also help understanding the relationship, if any, among various rock pieces (non-artefacts), different types of artefact clusters, relatively bare spaces on the plan, post-holes, manuport non-artefact blocks of stones including those used in alignments, etc. The study may lead one to interpret various activities of the Stone Age communities. Keeping this in view, besides detailed plans recording all the features of the habitational floors, some simplified plans have also been prepared with the sole objective of highlighting only certain habitational remains of a few localities. Other features of the floors have been obviously left out from these plans.

It has been our endeavour to record and present the archaeological data as objectively as possible. Even in the interpretation of evidence, attempts have been made not to lose sight of the archaeological perspective. Nevertheless, ethnographic data pertaining to certain nomadic tribes, which have been presented in some monographs and also collected by us from the *Kodās* of the Kharagpur range, have also been utilized for some deductions. In fact, in view of their importance for the Archaeology of nomadic people, some ethnographic details of certain culture-patterns of the *Kodās* have also been included in a brief chapter. However, in such deductions also the archaeological evidence remains our primary source. Data pertaining to paleo-environment are rather meagre from Paisra. It has been reconstructed mainly on the basis of certain soil analyses.

Acknowledgement

In the course of field investigations and also the preparation of this report many individuals and institutions have helped us in various ways. We wish to record our gratitude to all of them, and express our thanks particularly to the following.

Prof. K.K. Sinha, Incharge of the Archaeology Unit, Department of Ancient Indian History, Culture & Archaeology, provided technical staff and finances; Prof. Lallanji Gopal, Head of the department between 1985 and 1987, accorded permission to conduct field work and helped us obtaining financial assistance from the University funds; Prof. Purushottam Singh, present Head of the department and Professor-Incharge of Archaeology, arranged for the technical assistance needed for finalising the site plans and other illustrations. Prof. Singh's personal interest and encouragement enabled us to prepare the final draft of this report.

Shri O.P. Tandon, Officer on Special Duty, Banaras Hindu University was kind enough to arrange funds from the University for three field seasons.

We have received financial support in the form of matching grants from the Director General of Archaeology in India, Archaeological Survey of India, from time to time. Besides, the Survey was also kind enough to grant a sum of Rs. 25,000/- towards the publication of this report.

The consecutive Divisional Forest Officers and other officers of the Forest Department, District Magistrates, Sub-Divisional Officers, Superintendents of Police and other officers of the Police Department, District Munger, always extended their full co-operation ungrudgingly during our stay at Paisra. Without their support it would not have been possible for us to conduct field work in this dense forest which is also said to be a den of criminals.

Shri B.K. Thapar and Shri J.P. Joshi—both former Director Generals of the Archaeological Survey of India—and Shri M.C. Joshi, the present Director General took personal as well as official interest in the preparation of this monograph by giving technical advice and encouragement.

A group of young archaeologists assisted us in the field camp at Paisra. Shri Dinesh Kumar Burman, Dr Ravindra Kumar, Shri Sunil Kumar Dubey and Shri Parashu Ram Pandey accompanied us in our earlier exploratory investigations. Dr Pradeep ·Kumar Behra, Shri Shivendra Singh Adhikari and Shri Arun Kumar Misra were associated with the excavations during various field seasons.

Shri Lalta Mishra accompanied us to the field in 1986. Besides, he also provided technical advice in the preparation of line drawings. The reconstructions of different types of shelters have been prepared by Shri Brahmadev Madhur. Shri Shiva Kumar and Shri Rambadan participated in the investigations in the 1986 and 1987 field seasons and prepared some of the plans of the site as well as drawings of artefacts. Shri O.P. Khaneja has been instrumental in preparing final prints of the halftone illustrations of this report. However, the illustrations were prepared, by and large, by the authors themselves. The photographs in general were taken by the first author, while the other author prepared most of the plans of the trenches and tool drawings.

For library requirements we received full co-operation from the Librarians and their staff members of the Indology Library, Banaras Hindu University, Library of the National Museum, New Delhi, and Library of the Archaeological Survey of India, New Delhi.

Since this monograph is intended as an humble tribute to our alma mater—Banaras Hindu University on the occasion of its Platinum Jubilee, we approached Prof. R.P. Rastogi, our Vice-Chancellor, for writing the Foreword. He obliged us ungrudgingly.

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1

Discovery of the Site

Our interest in the Stone Age archaeology of Munger district in Bihar was aroused by the discovery of quite a few stone artefacts of Mousterian tradition at the Jamalpur hill by Shri Lakshmi Narain Singh, a post graduate student of the department, working on his M.A. dissertation under the supervision of the first author (*Indian Archaeology 1961-62 : A Review* : 5). However, actual field trip to the area could not materialise till December 1968, when it was possible to locate a very rich Middle Palaeolithic industry on the flat top of the *Kālipahār* near Jamalpur town (Pant P.C. & V. Jayaswal, 1977-78 : 15-33). Keeping in view the fact that the Jamalpur industry could not have existed in isolation, the first author advised one of his research students Shri D.K. Burman to work on the Stone Age industries of Munger and Bhagalpur districts, with particular emphasis on the hilly tracts. As part of the research programme of Shri Burman, a short field trip of about a fortnight's duration was planned in October-November 1972. It was during this field trip that we located the extraordinarily rich site at Paisra (Pant P.C., V. Jayaswal & R. Tiwari, 1978 : 21-31).

The site of Paisra was discovered rather accidentally. We had planned to concentrate at and around Bhimbandh, from where palaeolithic implements were reported earlier in stratified deposits (*Indian Archaeology 1960-61 : A Review* : 5-6, and *Indian Archaeology 1965-66 : A Review* : 7-8). Some tools had also been found near the Kharagpur lake along the river Man (Bose, N.K. *et al.*, 1960). With this background we approached the Divisional Forest Officer (D.F.O.) of Munger to permit us to stay at the Forest Rest House of Bhimbandh, the only place for camping in an otherwise densely forested region. However, the D.F.O. expressed his inability to oblige us, since the Rest House was already booked for other parties. Instead he suggested us to camp at the Paisra Rest House, some 18 km away from Bhimbandh. We had no other alternative but to accept the suggestion. Thus, instead of Bhimbandh we reached the lonely Rest House at Paisra, located in the thick reserved forest. Ladyluck smiled on us, and the very next morning, as soon as we crossed the barbed fence of the Rest House, we were flabbergasted to find a big scatter of stone artefacts including two typical Acheulian cleavers. A few steps more and we came across another similar scatter. The locality was so rich that within an hour we collected a few hundred stone artefacts. Preliminary examination indicated that an Acheulian habitation should not be far away from this place, and we immediately realized that by directing us to Paisra the D.F.O had really done us a great favour.

2

The Site and It's Environs

Paisra is a small tribal village (long. 86°, 26′ : lat. 25°, 08′) in Munger district of Bihar. It can be approached both from Haveli-Kharagpur (the nearest market) and Bhimbandh (the well known hot spring and tourist place of the Munger district) by forest roads (Fig. 1). It lies at a distance of about 30 km west of Haveli-Kharagpur and 18 km north of Bhimbandh. The nearest railway station is Dharahara, situated at a distance of about 20 km northwest of Paisra, the two places being linked by a forest road, which is not motorable nowadays for want of proper maintenance. One can approach Haveli-Kharagpur from the district headquarter Munger by metalled road from where it is approximately 40 km southwards. The village Paisra is situated in the midst of the thick forest of Kharagpur hill range. The entire region is traversed by a number of forest roads which are jeepable throughout the year except the rainy season. Although Dharahara and Bariarpur Railway Stations are nearer Paisra, the biggest Railway station in the vicinity is Jamalpur on the Patna Howrah loop-line where all the trains stop. It is easy to reach Haveli-Kharagpur or Bhimbandh from Jamalpur by road.

Paisra is situated in an extensive valley surrounded by low hills on all sides. There are two other villages in the same valley, *viz.*, Bariara to the west of Paisra and Kandini towards the east. Although the entire valley has suffered surface erosion, yet it has been more severe in the areas surrounding human settlements due to extensive forest clearance for the purpose of preparing fields for cultivation and continuous cattle grazing. This is particularly noticeable in and around Paisra, where large portions of the earth cover have been completely eroded, resulting in

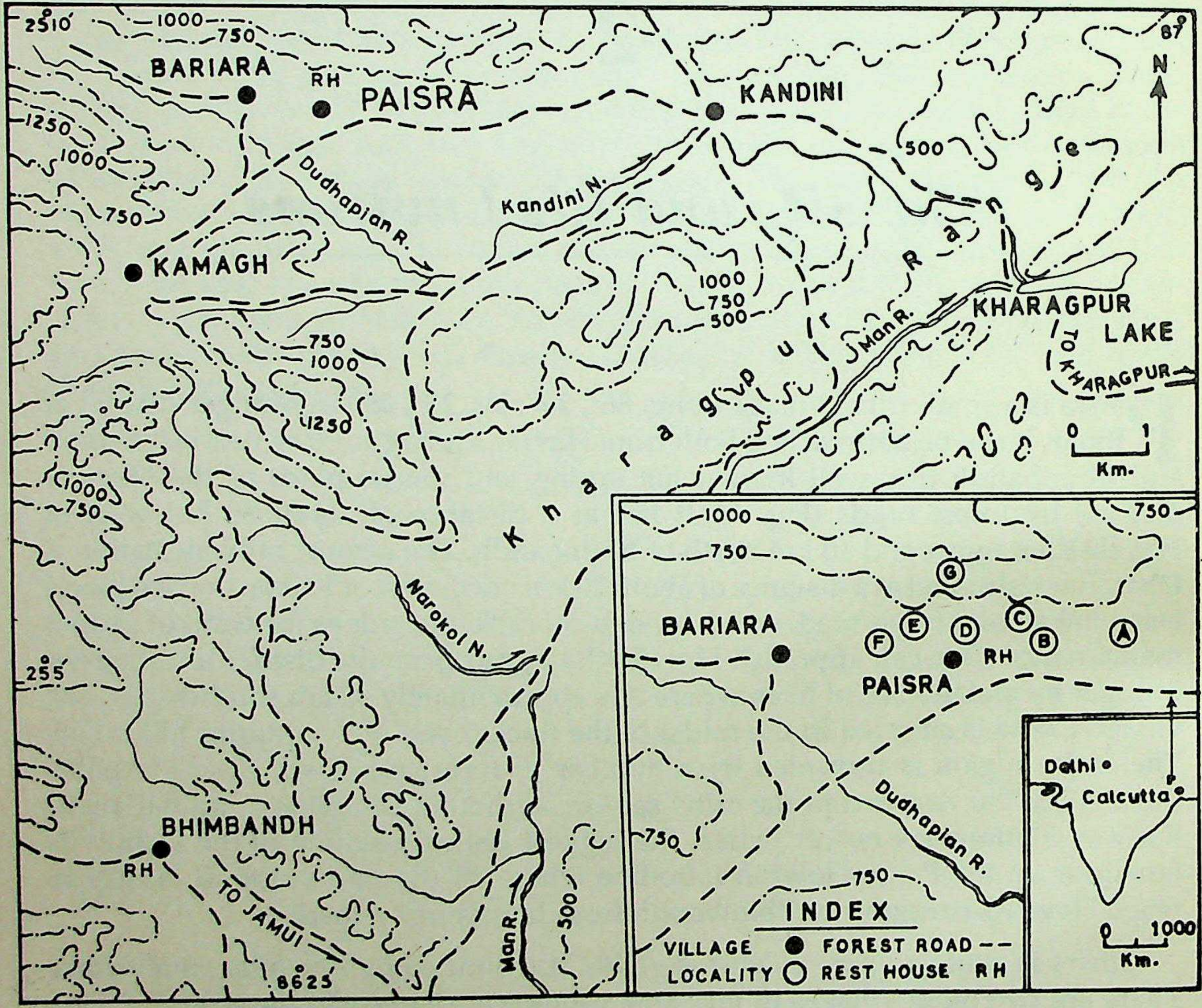
25°10'
1000
750
BARIARA
RH
PAISRA
KANDINI
87°
N
1250
1000
750
Dudhapian R.
Kandini N.
500
KAMAGH
1000
750
500
Man R.
KHARAGPUR
LAKE
TO KHARAGPUR
Kharagpur Range
750
1000
1250
0
1
Km.
1000
750
Narokol N.
25°5'
BHIMBANDH
RH
TO JAMUI
86°25'
Man R.
500
750
BARIARA
PAISRA
RH
G
F
E
D
C
B
A
Dudhapian R.
Delhi
Calcutta
0
1000
Km.
INDEX
VILLAGE ●
FOREST ROAD
LOCALITY ○
REST HOUSE RH

Fig. 1. Site map.

a very zig-zag contour line, which at certain places drops rather abruptly as much as more than 5 m (Fig. 1). Thus, the areas which escaped denudation look like big and small patches of upland dotted here and there in the entire region. The village Paisra as well as the Forest Rest House are located on one such landmass, although the area surrounding it has undergone severe erosion.

Several small streams, which are in fact rain gullies, originate from the foot of the hill, about 1 km northeast of the village, disecting the entire area (Locality A) into a number of units of various sizes. However, as soon as these streams cross the slopes, they merge into one to form a fairly broad rain-gully, which borders the village on two sides. This rain-gully is comparatively narrower towards the north of the village, but, as soon as it turns towards southwest, it becomes markedly broad, its width being comparable to that of small rivers. Nearly 200 m southwest of the village it cuts off the landmass into two unequal parts; the one lying south of the gully (Locality F) is much bigger in size than the other located towards the north (Locality E). It finally joins the Dudhapani *nullah*, which runs in northwest-southeast direction. Apart from this, there are also some other rain-gullies in the Paisra valley, majority of which originate from the northern hill range. Obviously, they carry water only during the rainy season. When the rains are torrential, the village Paisra looks like a small island.

In view of its topography, the Munger district is clearly divisible into two broad divisions. While the northern part, drained by the massive Ganga and its tributaries, presents a rather monotonous topography of alluvial plains, the southern division is characterized by a number of small hill ranges. Among the various ranges of different extensions, the Kharagpur hills are the most extensive. They appear to form an irregular triangle with very undulating topography. The range is drained by the Kuil river in the west and the Man in the east, though a large portion of the Kharagpur hill is drained mostly by small streams which carry rain water only during the wet season, and a number of both hot and cold water springs. The main hot springs of these hills are situated at Bhimbandh, Sringi Rishi, Rishikund, Bansa hill and near Kachu. The cold springs are rather rare, the most important among them being at Karme, about 8 km south of the Paisra village. In spite of all these resources, there is generally an acute shortage of water in most of the Kharagpur hill range, particularly in summer. The inhabitants of Paisra have to fetch water all the way from the Karme during the dry season.

The vast Kharagpur hill range comprises a number of low hills of irregular formation, said to be outliers of the Vindhyan series. The hills do not seem to run in any uniform direction. There are quite a few steep ridges rising from the low ground from all sides. Some of the peaks rise to a height of about 500 m above the sea level. A few of these even exceeds this height, *e.g.*, Maruk. Although the range is generally a bold and striking mass of rocks, covered with deciduous forests, yet it also contains a good number of valleys suitable for cultivation. Some of these valleys are fairly extensive covering an area of more than 25 sq. km, such as those of Chormara and Paisra. It is very interesting to note that most of these valleys not only contain tribal settlements at present, but they also attracted Stone Age human groups in the past to settle there temporarily. Most of the Stone Age industries/settlements, which we have discovered so far in the Kharagpur hill range, are located in one or the other valley, very often in the vicinity of present day settlements. The examples of Paisra, Kandani, Gurmaha and Chormara may be cited in support of the above observation.

The rocks of various hills belong to different groups. The earliest of them consists of rocks of the Archean system, and includes various formations collectively known as the Bengal gneiss. The other series is that of the Dharwar schists, the name given to the formations in southern India. Under this series comes a number of highly altered sedimentary and volcanic rocks, including quartzites, quartz, schists and various other types of schists. Most of the Kharagpur hills belong to the stratified series of the Dharwar schists. It is generally held that the rocks of the Munger district are highly metamorphosed. However, the rocks of the Kharagpur hills are not so much altered as those of other ranges like the Gidhaur range. As a result of this it is possible to find unaltered shales and sandstones in certain pockets of the Kharagpur hill ranges, such as in and around Paisra. Among the recent geological formations, mention may be made of laterites, which form the upper crust along with the alluvium in certain areas. These formations can be noticed in and around the Naruk peak, as well as, between Karme and Chormara. Many minerals and rocks are quarried in the southern part of the Munger district, particularly the Kharagpur hills. The slate quarries of this hill range are particularly well known in Bihar.

The Munger district experiences the typical monsoon climate with hot and dry summer, followed by wet season of three to four months duration and fairly dry and cold winter. The climate is neither as warm as that of the western parts, nor as moist as that of eastern India. The average annual rainfall is about 120 cm, out of which about 100 cm of precipitation is received in the rainy season lasting from mid June to September (Roy Chaudhary P.C. 1960: 29-30).

The Site and It's Environs

Nearly 12% of the total area of the Munger district is covered by forests which also include the Kharagpur hill range. The principal species of vegetation found in these forests are as follows: Sal or Sakhua (*Shirea robusta*) Kendu (*Dipspyros melanoxylon*), Salga (*Boswellia servata*) Palas (*Butea frondosa*), Chihnut (*Butea superba*), Kachnar (*Bauhinia purpurea* and *Buchinia varigata*) Chihor (*Bauhinia vahlii*), Harre (*Terminalia chebula*), Bahera (*Terminalia belerica*), Asan (*Terminalia tomentosa*), Amla (*Emblica officialines*), Simuel (*Salmalia malabaricum*), Van kapan (*Gossipoum*), Karaunji (*Sterculia urens*), Sabai (*Ischaemum angustifolium*), Piar (*Buchanania latifolia*) Gamhar (*Gmelina arborea*) Gular (*Ficus glomerata*), Mahua (*Madhuca latifolia*), bamboo (*Dendrocalamus strictus*), etc. Besides these, there are numerous species of grasses and shrubs. However, the vegetational cover is generally not very thick.

The fauna of the district is hardly different from that found in other parts of northern India. Though tigers are no longer found in the district, yet a limited number of this species roamed in the southern hilly tracts till the end of nineteenth century. Leopards and bears (*Urses metursus*) are common species in the forest regions. Hyaenas, wild cats, large Indian Civet (*Viverricula malacceusis*), wolves, jackals, Indian fox, rare wild dogs, Indian rattle (*Mellivora indica*), some rodents like porcupines, hares, rats and palm squirrel, two species of monkey, *viz.*, Langur (*Samno pithecus entellus*) and Bandar (*Macacus rhesus*), and a number of ungulates like Sambhar (*Cerves unicolon*), spotted deer, ravine deer, barking deer, Neelgai (*Boselaphus tragocamalus*) and wild boars are the other important species found in the forests of the Munger district (Roy Chaudhary P.C., 1960: 18-24).

Game birds are comparatively rare in this district now, but they must have been more numerous in the past. It is rather surprising that the birds in general are not so numerous in the forests of this district including those of the Kharagpur hills. Still there is a fair variety of bird species though their actual number may not be very large. Some of the important species are: pea-fowl, jungle-fowl, spur-fowl, grey partridge, black partridge, marsh partridge, rare bustards, some species of plover, crane, snipe, some common sand-pipers, stork, many species of pigeon, parrot, peacock, cuckoo, a few species of vulture, falcon, rock owl, crow, eagle, numerous swallows, martins and swifts, horn-bill, wood-pecker, etc. Besides the above, there are several species of reptiles including those of lizards and snakes.

3

History and Plan of Investigation

During the five days of our investigations at the site in 1972 we made a sizeable collection of artefacts consisting of beautiful handaxes and cleavers manufactured in advanced Acheulian technique, along with flake-tools, unretouched flakes, debitage, lumps of raw material, all indicating that it was a factory site. Besides, it was also observed that "The artefacts do not occur uniformly on the surface. They appear in the form of clusters at those places which have undergone erosion and are very scarcely seen on uneroded surface. This feature points to the possibility of an implementiferous layer just below the humus" (Pant P.C., V. Jayaswal & R. Tiwari 1978 : 21-31). Thus, there was strong reason to be optimistic about the presence of an undisturbed habitational layer in those localities of the site which had escaped denudation in the course of time.

In view of these observations, a second trip to the site was planned in the year 1980, with the limited purpose of proving or otherwise the existence of an Acheulian habitational layer (*Indian Archaeology 1980-81 : A Review* : 9). An area lying more than three hundred metres northeast of the Rest House was selected for intensive probing and section scraping. Four small trenches measuring 2 × 1 m were excavated at different places, and it was found that the stratigraphy generally remained the same at all the four scrapings. A thin layer of disintegrated rock and hameatite pellets were located everywhere just above the underneath shales. This was the horizon of the Acheulian culture at the site. It was superimposed by a thick compact reddish yellow earth and alluvium measuring 1.5 to 2 m in thickness. Though devoid of human activity, this layer of earth served as a protective cover on the implementiferous horizon. Besides, in order to check whether or not the artefact scatters found resting on the exposed deposit of haematite pellets or bed-rock in the regions where upper cover had been completely eroded were *in situ* position, three such clusters were also cleaned and examined. It was noted after preliminary examination that most of these scatters seemed to lie in more or less undisturbed position, since a large majority of artefacts including numerous chips in each of them were made of the same raw material. Almost all specimens exhibited similar characteristic features of colour and composition. Besides, a few artefacts were also conjoined. These observations appeared to confirm our presumption that the area around Paisra was a habitat of an advanced Acheulian population for a considerable period, and a good part of it was still preserved in its primary context at this site.

Encouraged by our findings at Paisra during the above two short visits, a larger field trip to the site was planned from March to May 1984, with a clear objective to locate habitational floors of the Acheulians. Accordingly, it was found desirable, first, to determine the extension of the Acheulian habitation, and second, to probe at various places with a view to locating habitational floors. A close examination at and around Paisra revealed that the cultural remains of the Acheulians were scattered in a very wide area of about two and a half square kilometres. It was also observed that the habitation was limited to a part of the extensive valley around Paisra, and there was total absence of lithic tools in the surrounding hills. Even the few small rock-shelters located at various heights of these hills did not yield genuine Acheulian specimens. Thus, the evidence clearly indicated that the Acheulian population preferred the valley against the hills as habitat, which could presumably accord all the necessary facilities for its survival and subsistence.

Before selecting various areas for digging it was found desirable to divide the entire habitation into different localities, as it was deemed necessary to do so for the sake of proper recording of the excavated material of the site of the dimension of Paisra, and also in view of unusually thick density of artefacts at least at a few select areas. As many as five localities, from A to E, were selected for intensive investigations (Fig. 1) in the 1984 season. Two more localities, *viz.*, F & G, were chosen for excavation in the subsequent season of 1986, thus bringing the total to seven. One or more trenches of various dimensions were laid at suitable places in each of these localities for excavation. Besides, it was also found desirable to record all the artefacts of a few select scatters exposed on the surface with a view to comparing this evidence with that of the excavated trenches.

The area probed in the 1980 season was named as locality A. Located at a distance of more than 300 metres northeast of the Rest House, it is close to the northern hill series and extends upto 200-300 metres in the east and about 300 metres in the south. The northern part of this locality is in fact formed by a hill slope, traversed by three small streams, the upper part of its deposit being almost entirely formed by detritus from the neighbouring hill. In this part are also encountered several blocks of quartzite which were used as raw material by the Stone Age dwellers of Paisra.

Our locality B is close to the Rest House. The high land of this locality on which also stands the Rest House lies just south of the main gully, described earlier. It forms a general gradient from south to north and the deposit close to the gully hardly exceeds twenty five to thirty centimetres. A large trench measuring 15 × 5 metres was laid on the northern slopes of this locality at a distance of about 150 m north-northwest of the Rest House. Since this trench was located at a distance of not more than 300 m southwest of the locality A, which was subjected to probings in 1980, and since the upper deposit was comparatively thinner at this place than the upland of the south, the objective was to examine whether or not the pattern of habitational layer is the same in this area also, as we noticed in our earlier investigations in the locality A.

The area lying at the foot of the northern hills at a distance of about 500 m northwest of the Rest House across the gully and about 200 m north of the Paisra village, was marked as locality C. A considerable part of this locality had undergone severe erosion as a result of which the habitational layer had been almost completely exposed. On close examination it was observed that the eroded surface was littered with thousands of both finished and unfinished artefacts of Acheulian facies. One such select exposed surface was minutely studied and its every artefact was plotted on a graph. While preparing the plan we realised that artefacts, though littered all over the surface, in fact occured in the form of clusters, and each cluster seemed to make a unit in the sense that most of its debitage was the product of a single block of raw-material. Not only some of the specimens perfectly conjoined, but in one case two parts of a cleaver, which might have broken in the process of manufacture or use, were found at a distance of about 1.75 m from each other (Fig. 5). This study revealed that in spite of severe denudation, the exposed surface preserved artefacts more or less in thier original position. This prompted us to select an undisturbed area in this locality for careful digging, and a trench of

7 × 4 m dimension was laid less than 50 m west of the exposed surface, which we had already examined and plotted on the graph.

Nearly 100 m south of the trench of the locality C was selected a flat low area just on the other side of the gully for horizontal excavation. This area marked the northwestern slope of the high land, on parts of which, some 150 to 200 m southwards, is also located the Paisra village. It was named locality D. The nearby gully was found to be exceptionally rich in handaxes and cleavers and such artefacts as denoted extensive use of the Levallois technique. This rich exposed surface was also plotted on a graph (Fig. 6). It was considered worthwhile to expose a large area in the neighbourhood with the distinct objective of finding well preserved factory-cum-habitational floors of the Acheulians. Accordingly, sixteen trenches of 2 × 2 m dimension were planned on the nearby slope, where part of the upper deposit had already been eroded. In the 1986 season, two more trenches measuring 4 × 4 m were also laid to the south of the area exposed earlier in 1984.

The extension of the Acheulian habitation was traced upto about 500 metres west and southwest of the Paisra village. However, large parts of this area had undergone severe erosion, as a result of which uneroded portions looked like two huge mounds separated from each other by a seventy to eighty metre broad gully. It was noted that the entire eroded surface around these uplands was very rich in stone artefacts. The smaller mound which was not more than 100 to 150 metres west of the village was marked as locality E, and two trenches measuring 4 × 4 and 5 × 5 m were excavated at this locality in 1984. The larger trench yielded exceptionally significant evidence of Acheulian habitation in the form of a four metre long stone alignment. It was considered worthwhile to probe this locality further. Consequently, two more trenches measuring 6 × 4 m each were laid close to the earlier trench.

It was observed that the nature of habitation unearthed at the localities D & E differed fundamentally from each other. We were obviously curious to know what type of habitation, if any, was preserved in the other mound of this area lying across the gully. In pursuance of this objective a massive trench of the dimension of 25 × 5 m was laid on the northen slopes of the other mound in the 1986 season. This area was named as locality F. When the excavations revealed the evidence of a new blade-bladelet culture at the depth of about 65 to 90 cm from the top, it was thought desirable to extend the area of excavation in this locality with a view to knowing more about this fresh discovery. As a result, three more trenches, each measuring 5 × 5 m, were added to the earlier trench, towards east, west and south.

In the course of our frequent exploration of the site, particularly on occasional non-field days, we noticed quite a few stone alignments on the vast eroded area lying at a distance of about 400 m northwest of the village Paisra. These alignments very often showed semi-circular or straight patterns and were invariably located on the higher contours of the undulating surface of this valley. In view of the fact that such stone alignments were lying directly on the hardened deposit of haematite pellets along with a few Acheulian implements and they were concentrated in an area of about 4000 square metres, it was suspected that they represented some sort of habitational remains of the Acheulians. Since these tentative observations were based upon the evidence found on the exposed surface, it was considered necessary to establish their validity by actual excavations. Fortunately, a small patch was located in the vicinity, which was only partly eroded at the top, preserving the lower deposits intact. A trench of the dimension of about 8 × 5 m was excavated in this area in the 1986 season. It was marked as locality G.

The short trip of Paisra in 1987 was aimed at uncovering the rest of the evidence of Acheulian settlement in the locality G. As mentioned earlier, a fairly big area of an upland close to the trench excavated in 1986 was recognised as a potential area for locating habitational remains. While a big part of this upland was devoid of any earth cover, with the result that fairly large number of stone alignments were visible on the surface of compact haematite pellets, a smaller area still remained covered by a thin layer of earth. It may be recalled that a few stone alignments similar to those noticed on the bare neighbouring surface and a couple of post-holes were found earlier in the only trench excavated in this locality in 1986. The main objective of our investigations in 1987 was to find out whether there was any relationship between the stone alignments of the exposed surface and those excavated in the trench. It appeared logical to presume that numerous stone alignments infact represented remains of some primitive and temporary shelters of the Acheulians or their some other structural activity. Further, it was also considered worth-while to investigate whether it is possible to visualize complete plans and nature of the shelters which the Acheulian settlers of Paisra made. With these objectives in view, the fieldwork undertaken in 1987 involved- (i) cleaning of the entire exposed surface thoroughly and to plot the alignments and stone artefacts associated with them on graph (ii) exposing the remaining part of the upland upto the trench excavated in 1986; and (iii) finding out a correlation between the two, if any.

4

Description of Excavated Trenches

In this chapter we propose to give locality wise description of the excavated trenches along with their stratigraphy and cultural material.

Locality A

This locality was probed in 1980 with the sole objective of determining the exact position and nature of the tool-bearing deposit. Two small trenches, measuring 2 × 1 m were excavated in an undisturbed plain, about 300 m northeast of the Rest House. The two trenches were separated from each other by about 10 m (*Indian Archaeology 1980-81 : A Review* : 9)

Cutting-1 was dug upto a depth of about 1.60 to 1.65 m. The tool-bearing deposit lay directly on the underlying shales and did not exceed 15 cm. This compact deposit was made of weathered shale and a large number of small haematite pellets. Only three small flakes of quartzite were recovered from it. The upper deposit measuring about 1.4 to 1.5 m can be roughly divided into two parts, the lower 50-60 cm being yellowish compact clay deposit and the upper one metre being silt and sand. The sandy silt appears to be a sort of hill wash brought down by occasional rains.

Cutting–2 was laid at a place where the upper cover appeared to be rather thin. The excavation revealed that our presumption was correct and the upper deposit, which covered the tool-bearing layer, hardly exceeded 50 cm. The nature of the implementiferous deposit was exactly similar to that found in the cutting–1. However, the number of artefacts was quite impressive in this small cutting. They included two cores, one being Levallois, and five flakes, all being bigger in size than those of the cutting-1. The raw material was quartzite.

About 200 m south of the first two probings of this locality two more trenches of the similar dimension were planned on a flat raised ground by the side of a small *nullah*.

The evidence from the cutting–3 was almost similar to that encountered in the cutting-1. However, the thickness of the upper deposit of hill wash and yellowish clayey earth exceeded that of the cutting-1 by about one metre. The number of artefacts was also three, which included one core of irregular shape and two flakes.

Cutting–4 which was only 8 m away from the cutting–3 was located on the other side of the *nullah*, the upper surface of which was partly eroded. As a result, the sandy silt cover measured less than 50 cm in this trench. The tool bearing deposit was almost entirely composed of haematite pellets with small patches of decomposed shales. Only five artefacts were unearthed, out of which one was irregular core and the rest flakes.

Thus, not a single typical Acheulian implement was encountered in any of these cuttings. However, the debitage was similar to that found associated with Acheulian handaxes and cleavers in other localities of the site.

Locality B

The cutting of the locality B, taken up in the 1984 season, was planned on a low plain, close to the main gully of the site. Since a good part of the sterile upper deposit had been already eroded at this place, it was considered possible to uncover a fairly large area with a view to determining distribution of the artefact types and the nature of habitation floor, if preserved. Hence, a large trench measuring 15 × 5 m was planned at this locality. The area selected for excavation had a gradual gradient from west to east.

Digging revealed that the upper cover was formed almost entirely by a sandy silt, presumably laid by rain water (Fig. 2). The deposit was thicker in the western part of the trench (between 90 and 95 cm) and became gradually thinner towards the east, where it was only 35 to 40 cm in thickness. The hill wash itself was divisible into two, the upper 10-25 cm being yellowish and the rest reddish in colour. The difference between the two layers, however, is mainly due to the absence or presence of ferrous oxide, though the texture of both remained more or less the same. The artefacts were found on the top of a thin layer of small haematite pellets

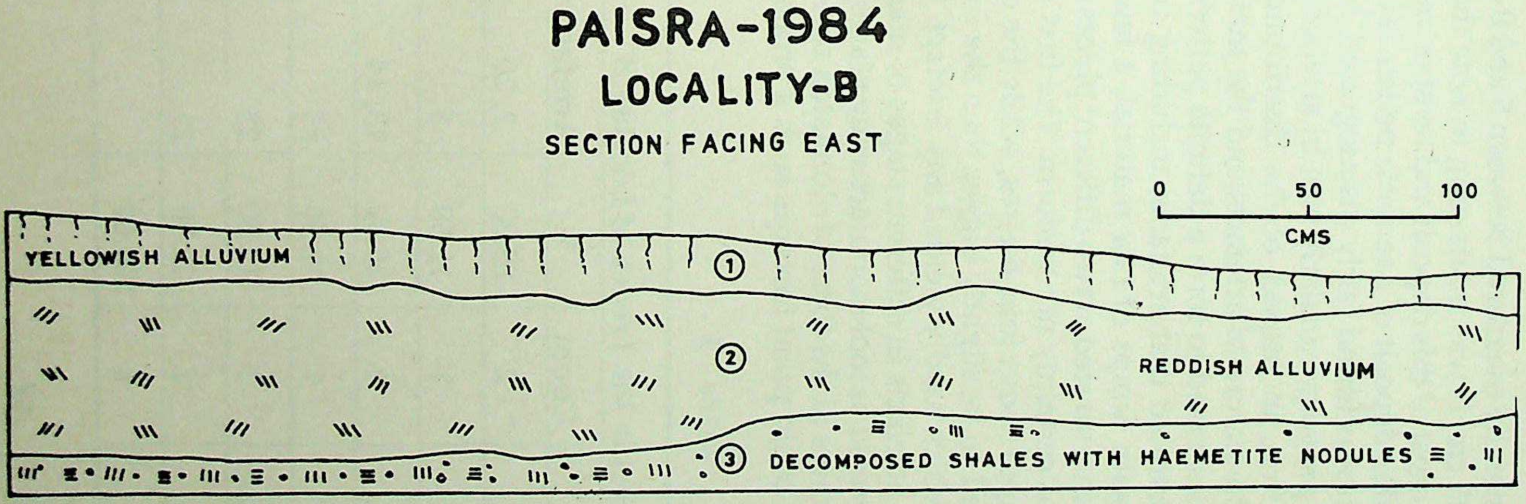
PAISRA-1984
LOCALITY-B
SECTION FACING EAST
0
50
100
CMS
YELLOWISH ALLUVIUM
①
②
REDDISH ALLUVIUM
③
DECOMPOSED SHALES WITH HAEMETITE NODULES

Fig. 2. Section of Trench 1 of Locality B.

and decomposed shales which generally measured between 5 and 8 cm, though at certain places it was as much as 25 cm. It was interesting to note that the artefact scatters were limited to the upper crust of this deposit and no specimen was found embedded deep in it. Just below this deposit of haematie pellets lay the bed-rock of shales, the upper crust of which was found fairly disintegrated. Looking at the large size of the trench it did not prove particularly rich in artefacts. However, a few points appear noteworthy, first, in respect of the distribution of artefact scatters and, second, in view of the nature of artefacts and the material used for them. The distribution of artefacts seemed to form a definite pattern. The plan of the trench (Fig. 3) clearly demonstrated that artefacts, including core, flake, occasional blades and chips, alongwith lumps of raw material, a few pebbles and certain rock pieces, were mainly concentrated at two different places on the surface of the floor. Their distribution was certainly not uniform. The first concentration was limited to the western side upto about four metres, while the other one was almost in the middle and appeared to be slightly bigger than the first one. There were distinct patches in the plan which hardly yielded any artefact. In the absence of sufficient number of chips and artefacts in different stages of manufacture, the concentrations could not be interpreted as tool manufacturing places, although the occurrence of some possible hammers in the form of elongated rock pieces, some cores and lumps of raw materials could point towards such a probability.

Table 1

Finished Tool-types in the Trench of Locality B

Types	Count	%	Artefact numbers
Convex side-scraper on flake	2	25.00	2, 20
Transverse scraper	1	12.50	3
Notched flake	2	25.00	13, 14
Notched blade	1	12.50	35
Burin with retouched side on flake	1	12.50	23
Knife on flake	1	12.50	21
Total	8	**100.00**	

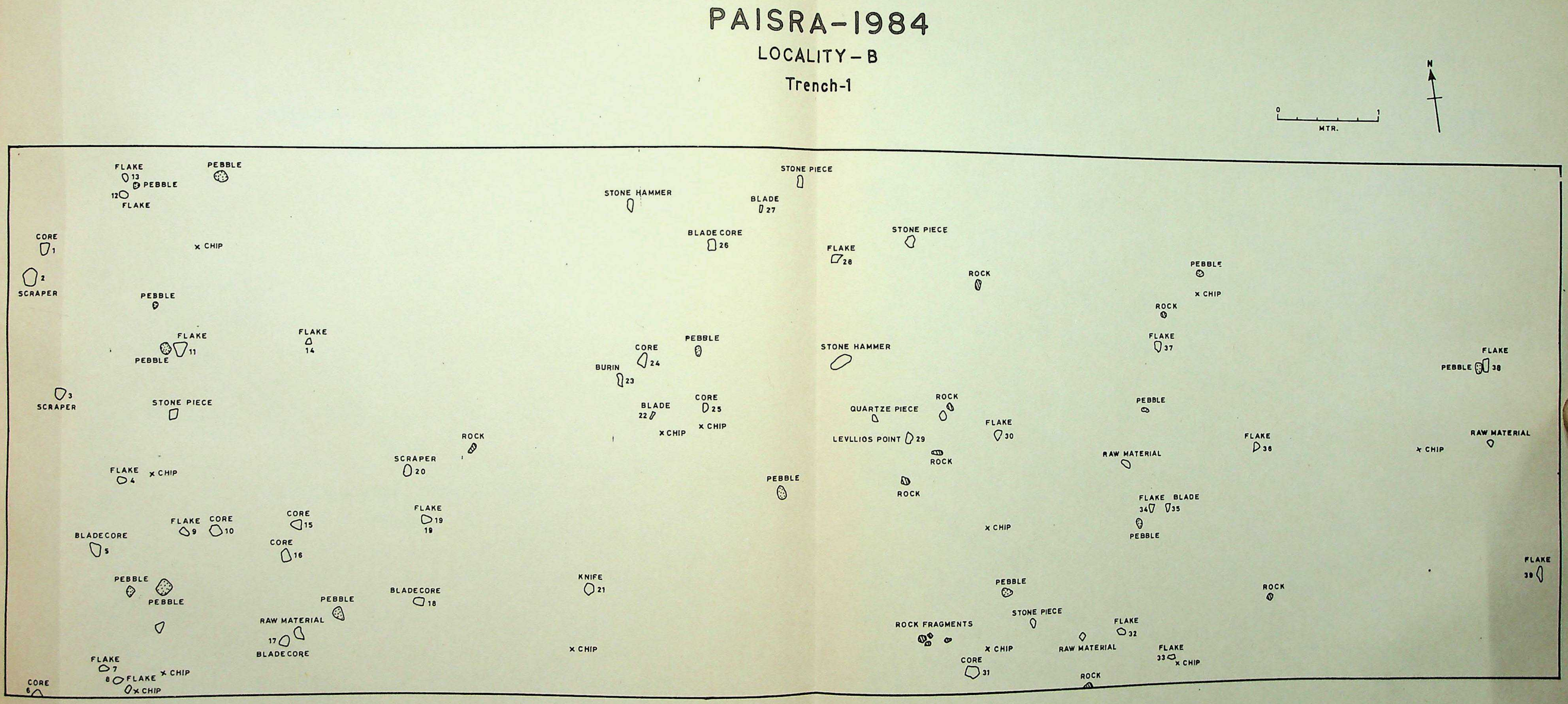
PAISRA-1984
LOCALITY-B
Trench-1
N
0
1
MTR.
FLAKE 13
PEBBLE
12 FLAKE
PEBBLE
CORE 1
2 SCRAPER
× CHIP
PEBBLE
FLAKE 11
PEBBLE
FLAKE 14
3 SCRAPER
STONE PIECE
FLAKE 4
× CHIP
BLADECORE 5
FLAKE 9
CORE 10
CORE 15
CORE 16
PEBBLE
PEBBLE
PEBBLE
RAW MATERIAL
17 BLADECORE
FLAKE 7
8 FLAKE
× CHIP
× CHIP
CORE 6
ROCK
SCRAPER 20
FLAKE 19
19
BLADECORE 18
STONE HAMMER
STONE PIECE
BLADE 27
BLADE CORE 26
CORE 24
BURIN 23
PEBBLE
BLADE 22
CORE 25
× CHIP
× CHIP
KNIFE 21
× CHIP
FLAKE 28
STONE PIECE
STONE HAMMER
PEBBLE
QUARTZE PIECE
LEVLLIOS POINT 29
ROCK
ROCK
ROCK
ROCK
FLAKE 30
× CHIP
PEBBLE
STONE PIECE
ROCK FRAGMENTS
× CHIP
CORE 31
PEBBLE
× CHIP
ROCK
FLAKE 37
PEBBLE
RAW MATERIAL
FLAKE 34
BLADE 35
PEBBLE
FLAKE 32
RAW MATERIAL
ROCK
FLAKE 33
× CHIP
FLAKE 36
ROCK
FLAKE
PEBBLE 38
× CHIP
RAW MATERIAL
FLAKE 39

Fig. 3. Plan of Trench 1 of Locality B.

Table 2

Blank-types in the Trench of Locality B			
Types	**Count**	**%**	**Artefact numbers**
Blade	2	10.4	22, 27
Levollois Point	1	5.2	29
Levollois flake	3	14.6	11, 30, 34
Partially dressed flake	2	10.4	9, 19
Core dressing flake	6	31.1	4, 7, 8, 29, 36, 39
Broken flake	5	26.3	12, 32, 33, 37, 38.
Total	**19**	**100.00**	
Chips	**15**		x

Table 3

Core-types of the Trench of Locality B			
Types	**Count**	**%**	**Artefact numbers**
Blade core with one platform	2	16.66	5, 26
Blade core with two platforms	1	8.33	17
Partially prepared blade core	3	24.99	6, 18, 24
Partially prepared flake core	3	24.99	1, 10, 31
Prepared non-Levallois flake core	2	16.66	15, 16
Levallois flake core	1	8.33	25

Core-types of the Trench of Locality B			
Types	Count	%	Artefact numbers
Total	12	99.96	

There were very few finished implements in the assemblage of this trench. The total number was eight, out of which seven were on flakes and only one on blade. But the core types seemed to present a different picture. Out of the total number of 19 cores as many as 9 were meant for blade production and the remaining ten were flake cores. Among the flake cores, a large majority (seven) fell in the partially prepared category, a type which could also be interpreted as primarily dressed cores for blades/bladelets. If this interpretation is accepted, then it could be argued that we were dealing with a blade-bladelet debitage in this trench. It may be noted that the raw material of an overwhelming majority of artefacts in this trench was a fine grained grey quartzite, which was very rarely used in manufacturing Acheulian implements at this site. In the 1986 season we were extremely fortunate to find remains of a Mesolithic settlement in the locality F. It is noteworthy that in the Mesolithic assemblage of this locality also the raw material was primarily fine-grained grey quartzite, and some flake cores also seemed to form a part of the artefact-kit.

The above discussion leads us to two logical conclusions. First, this trench yielded cultural remains of a Mesolithic culture and not of Acheulians. It is admited without any hesitation that our earlier assumption of this material being associated with the Acheulian now appears to be incorrect (Pant P.C. & V. Jayaswal 1984: 167-76). It may be mentioned, however, that the fact that a limited proportion of blade element also forms part of several advanced Acheulian tool-kits of the world, particularly those classed as Upper Acheulian, prompted us to regard this assemblage also as belonging to the Acheulian. The distribution of artefacts and their techno-typological screening lead us to another probable conclusion that the surface exposed in the excavated trench represented outskirts of the Mesolithic habitation where inhabitants threw their refuse. Perhaps due to unfavourable environmental conditions, remains of food stuffs did not survive.

Locality C

The trench of the locality C was located on the eastern slopes of a raised surface, close to the massive gully. It measured 7 m from west to east and 4 m from north to south. The objective behind planning such a trench was to have complete profile of the locality on the western side, and to have a fairly large area for exposing undisturbed habitation layer without digging huge upper deposits of the eastern part of the trench. The upper deposit was as much as 2.4 m on the western side and as little as 40–50 cm towards the east. The stratigraphy revealed three distinct layers, *viz.*, 70–80 cm thick yellowish sandy silt at the top, 95 cm to 1.10 m thick very compact weathered rock-debris with numerous haematite pellets, and finally the tool bearing deposit of cemented haematite pellets, measuring 10-30 cm. It was observed that the compact second stratum overlying the habitational layer contained more ferrous oxide in the lower part than the upper. As was noticed in the trenches of the localities A and B, the artefact scatters were lying on the upper crust of the layer of haematite pellets. The lower part of this deposit was also found sterile.

The trench proved exceptionally rich in artefact clusters. The entire surface of the tool bearing layer was littered with as many as about 600 finished tools, cores and flakes, very large number of chips, numerous lumps of raw material, a good number of small and medium pebbles, along with clusters of boulders and chunks of rocks. The entire surface presents a fairly convincing picture of a habitational floor. Although it does not seem possible to arrive at any definite conclusion about the structures, yet the concentration of rocks at different places appears to point towards their possible existence. For example, rock clusters of the northwestern corner of the floor seemed to form a rough semi-circle (Fig. 4). A somewhat similar formation could also be possibly noticed in the middle. It may also be presumed that some of the boulders, particularly those having flat surfaces, served as anvil stones for manufacturing implements. The presumption gets strength from the observation that fairly large clusters of chips, flakes, cores and lumps of raw material surrounded these boulders at many spots. Finished tools were also found at times in the vicinity. Looking at the pattern of these clusters, it is logical to presume that tools were manufactured at different places of the floor, perhaps by various individuals. Reference may also be made to the occurrence of a few pebbles scattered sporadically throughout the surface. They were of various sizes and a few smaller ones, particularly the elongated specimens, could have been used as convenient hammers. Finished and semi-finished implements of various types were included in the artefact scatters. Among the types, mention may be made of handaxe, cleaver, side scraper, rare end-scraper, chopper, chopping tool, denticulate and notched tool. Many of them, particularly the handaxes and cleavers, appeared in various stages of manufacture. Of particular interest is the observation that the tips of several handaxes were broken. The artefact assemblage from this trench indicated typical advanced Acheulian character.

Table 4

Finished tool-types in the Trench of Locality C

Type	Count	%	Artefact numbers
Chopper on nodule	2	3.84	38, 537
Chopping tool	1	1.92	346
Unfinished biface	6	11.53	23, 26, 31, 251, 260, 439
Lanceolate Handaxe (broken tip)	4	7.69	96, 393, 426, 576
Triangular handaxe	2	3.84	35, 588
Broken cleaver	2	3.84	400, 406
Cleaver	1	1.92	255
Concave side scraper	2	3.84	86, 189
Convex side scraper	4	7.69	219, 347, 368, 389
Straight side scraper	5	9.61	104, 462, 475, 487, 513
Flake with retouched top	2	3.84	413, 507
End scraper	1	1.92	354
Knife—Type Jamalpur	2	3.84	339, 364
Mousterian point	1	1.92	110
Notched flake	5	9.61	3,10, 61, 94, 477

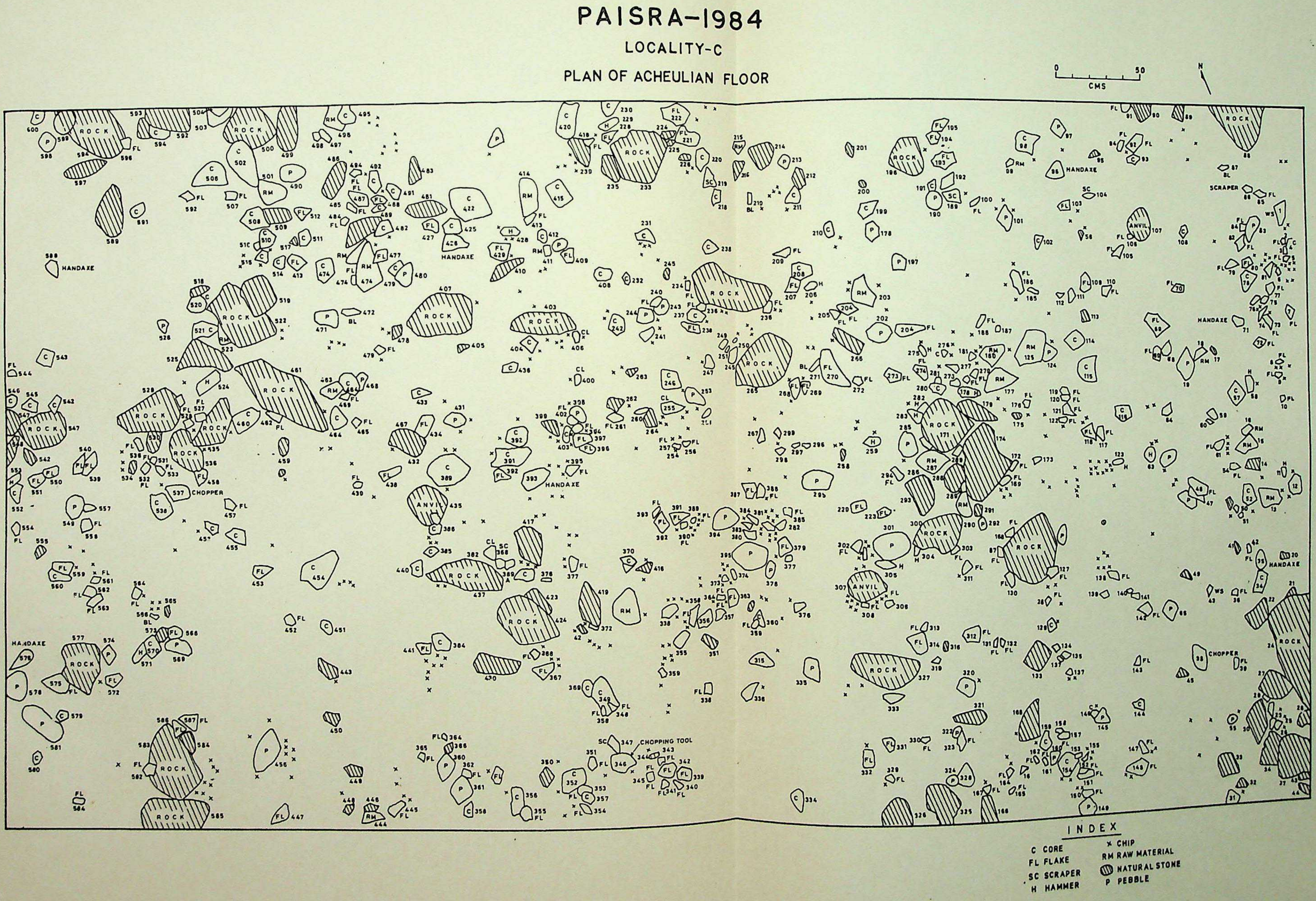
PAISRA–1984
LOCALITY–C
PLAN OF ACHEULIAN FLOOR
0
50
CMS
N
ROCK
ANVIL
HANDAXE
CHOPPER
CHOPPING TOOL
SCRAPER
INDEX
C CORE
FL FLAKE
SC SCRAPER
H HAMMER
× CHIP
RM RAW MATERIAL
▨ NATURAL STONE
P PEBBLE

Fig. 4. Plan of Acheulian floor of Locality C.

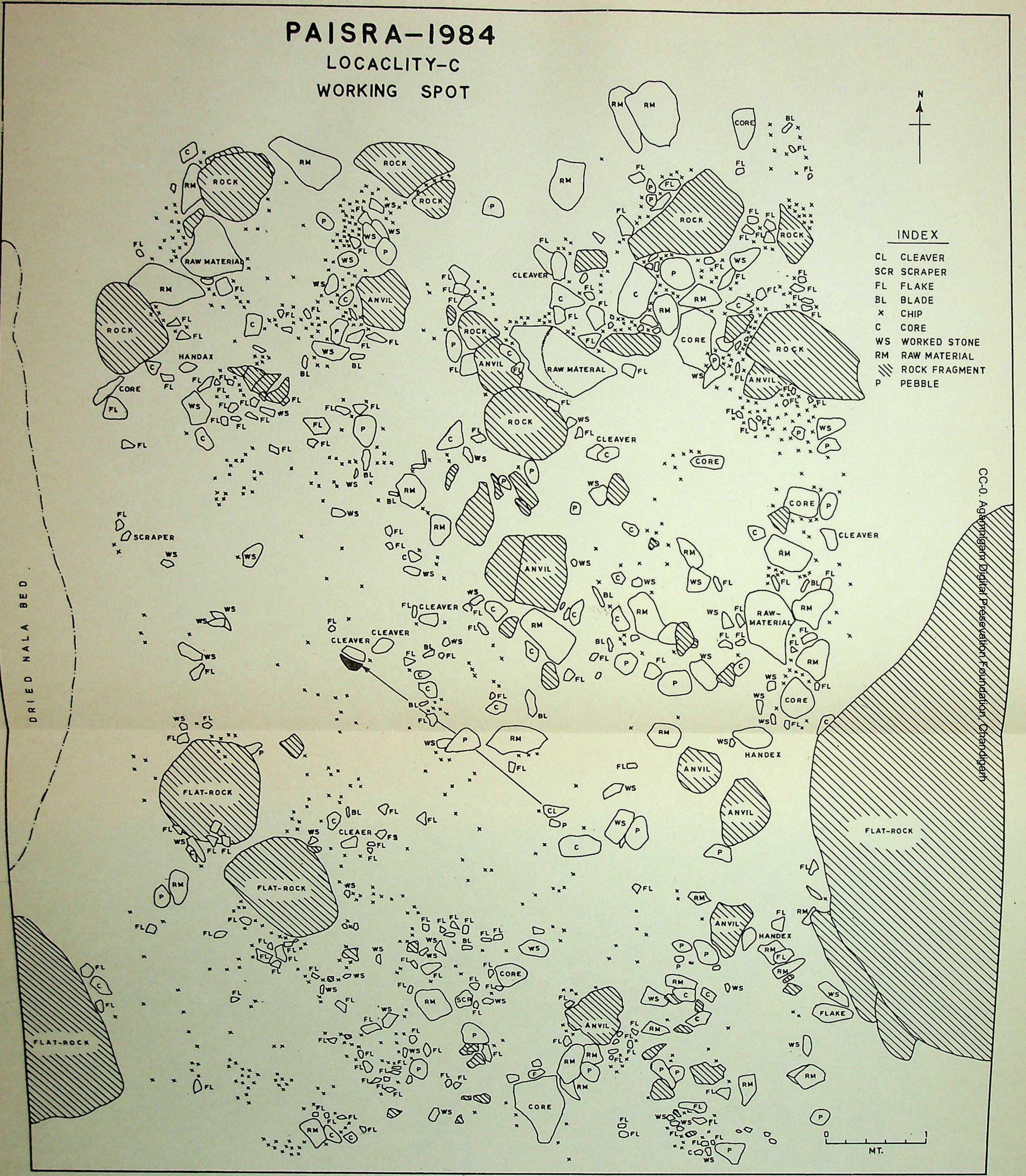
PAISRA–1984
LOCACLITY–C
WORKING SPOT
N
INDEX
CL CLEAVER
SCR SCRAPER
FL FLAKE
BL BLADE
× CHIP
C CORE
WS WORKED STONE
RM RAW MATERIAL
▨ ROCK FRAGMENT
P PEBBLE
ROCK
RAW MATERIAL
RAW-MATERIAL
ANVIL
FLAT-ROCK
CLEAVER
CLEAER
SCRAPER
HANDAX
HANDEX
CORE
FLAKE
DRIED NALA BED
0
1
MT.

Fig. 5. Acheulian Working-spot of Locality C.

Finished tool-types in the Trench of Locality C

Type	Count	%	Artefact numbers
Denticulated blade	1	1.92	87
Denticulated flake	3	5.76	120,438, 512
Partially retouched flake	8	15.38	2, 8, 92, 138, 143, 367, 465, 479.
Total	**52**	**99.91**	

Table 5

Core-types in the Trench of Locality C

Type	Count	%	Artefact numbers
Levallois flake-core	8	11.42	144,199, 369, 370, 440, 464, 489, 493
Blade-core	3	4.28	12, 34, 52
Prepared non-Levallois flake core	11	15.71	385, 386, 391, 392, 451, 453, 455, 542, 591, 595, 600
Partially prepared flake-core	23	32.85	103, 108, 115, 116, 237, 238, 358, 384, 474, 479, 491, 492, 495, 502, 506, 508, 510, 512, 514, 538, 545, 546, 560
Partially prepared blade-core	2	2.85	93, 425
Irregular core	23	32.85	4, 57, 98, 102, 114, 146, 210, 211, 216, 220, 230, 231, 340, 349, 352, 356, 357, 415, 420, 422, 511, 579, 580
Total	**70**	**99.96**	

Table 6

Blank-types in the Trench of Locality C

Type	Count	%	Artefact numbers
Blade	3	1.33	217, 472, 566
Levallois point	1	0.44	240
Levallois flake	24	10.66	36, 39, 70, 79, 105, 106, 194, 342, 343, 345, 353, 355, 362, 365, 441, 445, 447, 458, 494, 532, 533, 543, 544
Prepared non-Levallois	55	24.44	9, 10, 26, 29, 31, 35, 40, 47, 50, 51, 58, 59, 60, 64, 73, 82, 84, 100, 102, 117, 142, 153, 155, 156, 173, 180, 181, 183, 185, 193, 195, 221, 255, 260, 276, 277, 282, 319, 336, 340, 341, 347, 371, 373, 376, 380, 381, 382, 384, 386, 457, 527, 531, 557, 596
Dressing flake (Primary)	101	44.88	48, 67, 68, 69, 80, 81, 91, 112, 127, 130, 131, 132, 138, 150, 151, 152, 157, 164, 168, 169, 172, 186, 188, 204, 205, 207, 209, 222, 223, 228, 229, 234, 236, 238, 256, 257, 261, 268, 269, 270, 272, 273, 274, 279, 294, 302, 303, 306, 311, 312, 313, 314, 331, 332, 338, 339, 348, 357, 363, 368, 372, 377, 379, 385, 387, 388, 392, 395, 396, 397, 401, 402, 418, 427, 429, 434, 438, 439, 455, 458, 484, 485, 488, 528, 536, 539, 540, 550, 551, 554, 558, 559, 561, 562, 563, 564, 566, 567, 568, 572, 575
Dressing flake (Partially prepared)	23	10.22	12, 25, 27, 51, 58, 59, 60, 64, 112, 134, 135, 136, 137, 216, 251, 255, 260, 277, 282, 400, 406, 413, 592
Broken flake	18	8.00	52, 72, 77, 103, 118, 119, 121, 122, 139, 141, 147, 148, 251, 315, 368, 452, 454, 469

Blank-types in the Trench of Locality C

Type	Count	%	Artefact numbers
Total of blanks	225	99.97	
Chips	364		x

Table 7

Distribution of Non-artefact Categories in the Trench of Locality C

Category	Count	Specimen numbers
Hammer	18	11, 58, 63, 123, 178, 206, 229, 259, 275, 282, 283, 301, 304, 307, 428, 524, 553, 571.
Anvil	10	107, 229, 259, 283, 284, 304, 305, 435, 509, 524
Raw material	51	13, 15, 16, 18, 47, 125, 177, 180, 181, 192, 203, 215, 241, 247, 248, 249, 250, 254, 267, 286, 289, 290, 296, 297, 298, 299, 315, 336, 338, 355, 356, 359, 373, 374, 376, 377, 411, 414, 431, 444, 463, 468, 473, 474, 496, 497, 498, 501, 503, 504, 523
Pebble	41	19, 46, 55, 62, 83, 97, 101, 124, 126, 145, 149, 160, 190, 197, 198, 202, 213, 243, 244, 253, 285, 292, 295, 324, 334, 344, 360, 361, 375, 378, 394, 398, 412, 446, 526, 549, 569, 573, 574, 578, 581
Big block of rock	53	24, 27, 30, 34, 37, 88, 128, 166, 170, 171, 179, 196, 233, 235, 265, 287, 293, 300, 325, 334, 403, 407, 417, 419, 423, 424, 430, 432, 437, 461, 476, 481, 486, 499, 500, 505, 519, 522, 525, 529, 530, 535, 536, 541, 577, 583, 584, 585, 589, 592, 593, 594, 599

Distribution of Non-artefact Categories in the Trench of Locality C

Category	Count	Specimen numbers
Small stone piece	72	1, 14, 17, 20, 21, 22, 28, 32, 33, 41, 43, 44, 45, 49, 53, 56, 66, 89, 90, 95, 113, 133, 175, 200, 201, 212, 214, 216, 224, 225, 226, 239, 245, 258, 262, 264, 266, 288, 291, 316, 321, 322, 326, 350, 351, 366, 399, 405, 410, 416, 421, 443, 446, 448, 449, 450, 459, 467, 470, 478, 480, 483, 490, 517, 518, 534, 542, 547, 548, 555, 565, 597
Total	**545**	

Locality D

About 80 m southeast of the trench of the locality C was located a somewhat flat low plain across the gully. The place was found suitable for a small horizontal digging for two reasons. First, close to the low plain was located a large exposed surface littered with a very large number of handaxes, cleavers and other implements (Fig. 6). Second, a big part of the earth cover of the plain was already denuded by natural agencies. This led us to an obvious conclusion that the habitational layer could be reached there without cutting much sterile earth of the top. As many as twelve trenches of the dimension of 2 × 2 m, separated from each other by 50 cm baulk were planned in this area in 1984, and two trenches measuring 5 × 4 m and 3 × 3 m in the 1986 season. The stratigraphy revealed in these trenches was almost similar to that of the locality C. Here also the top layer was formed by a sandy silt deposit brought down by rain water. Below this was found a very compact clayey deposit of decomposed rock-waste with occasional haematite pellets. The deposit differed in thickness from about one metre to only seven centimetres from trench to trench. It was generally reddish in patches due to the presence of ferrous oxide. The underlying layer of well cemented haematite pellets rested directly upon the very undulating surface of the shale bed-rock. It was quite interesting to observe that the rock surface covered by the compact layer of haematite pellets formed a general gradient from southwest to northeast, while the slope of the top surface was from east to west. As a result of this topography the sterile earth cover measured as much as a little less than two metres in trench

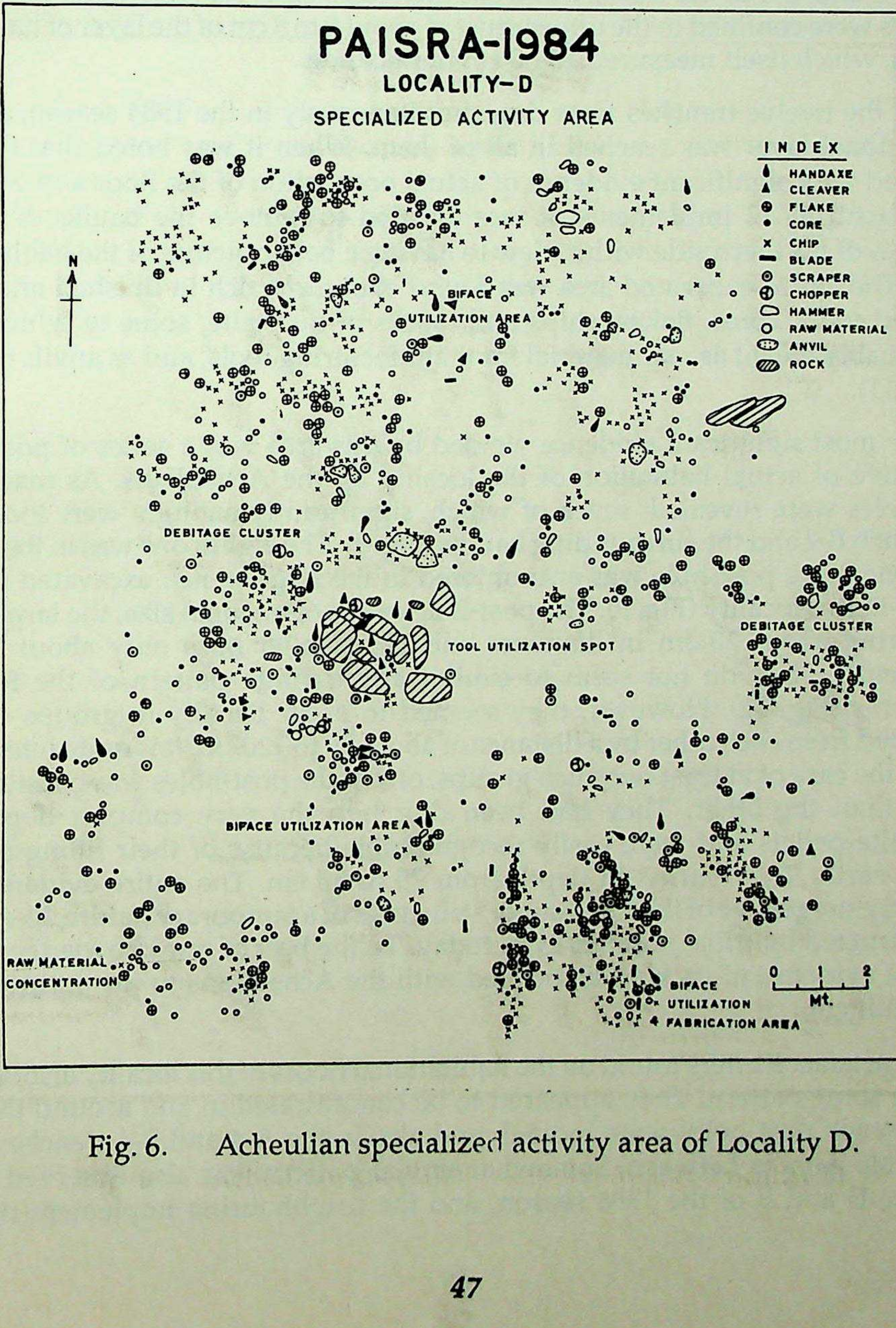
PAISRA-1984
LOCALITY-D
SPECIALIZED ACTIVITY AREA
INDEX
HANDAXE
CLEAVER
FLAKE
CORE
CHIP
BLADE
SCRAPER
CHOPPER
HAMMER
RAW MATERIAL
ANVIL
ROCK
N
BIFACE UTILIZATION AREA
DEBITAGE CLUSTER
TOOL UTILIZATION SPOT
DEBITAGE CLUSTER
BIFACE UTILIZATION AREA
RAW MATERIAL CONCENTRATION
BIFACE UTILIZATION & FABRICATION AREA
0 1 2
Mt.

Fig. 6. Acheulian specialized activity area of Locality D.

A-1 located in the northeastern corner, while it was less than 50 cm in the trenches C-2, C-3 and C-4 of the western and southwestern side. As elsewhere, the surface scatters were confined to the upper crust of about 5 to 8 cm of the layer of haematite pellets, which itself measured 10-30 cm in thickness.

All the twelve trenches were dug simultaneously in the 1984 season, and the habitational layer was reached in all of them. When it was noted that the area revealed very significant evidence of actual occupation of the floor and of *in situ* manufacturing of implements, it was decided to remove the baulks of the six trenches of northern side with a view to having a better picture of the habitational floor. The entire excavated area was found extremely rich in finished and semi-finished tools, cores, flakes, chips and blocks of quartzite, some of which were presumably meant as raw material for manufacturing tools, and as anvils (Figs. 7, 8, 9 & 11).

The most significant evidence yielded by this area was a series of post-holes indicative of actual habitation of the locality by the Acheulians. As many as 8 post-holes were revealed, seven of which, significantly enough, were located in the trench B-2 and the surrounding baulks (Fig. 8). The eighth one was in the trench A-4. One more post-hole was encountered in the large trench excavated in 1986 season in this locality (Fig. 9). The post-holes were of unequal size, the larger ones measuring about 20 cm in diameter and the smaller ones only about 12 cm. Apparently, they do not seem to exhibit any definite pattern of the form of structures (Fig. 12). However, they seemed to occur usually in groups of two, separated from each other by a distance of about 80 to 120 cm. It is quite interesting that in the case of at least two such groups, one of the post-holes was considerably larger than the other. They had been dug into the very compact deposit of haematite pellets and were easily recognizeable because of their filling of light yellow earth. They varied in depth from 20 to 30 cm. The entire evidence was distinctly suggestive of thatched super structures of a temporary nature, like which is constructed by tribal nomads even today. To the best of our knowledge, this is the first evidence of its kind associated with the Acheulians in the entire Indian sub-continent.

The artefact scatters found on the habitational floors of this locality also seemed to form some pattern. They appeared to be concentrated in and around the area where seven post-holes were located, and also in the A-4 and B-4 trenches, with noticeable gaps in between. Somewhat similar pattern was also observed in the trenches D and E of the 1986 season, and the neighbouring implement-rich ex-

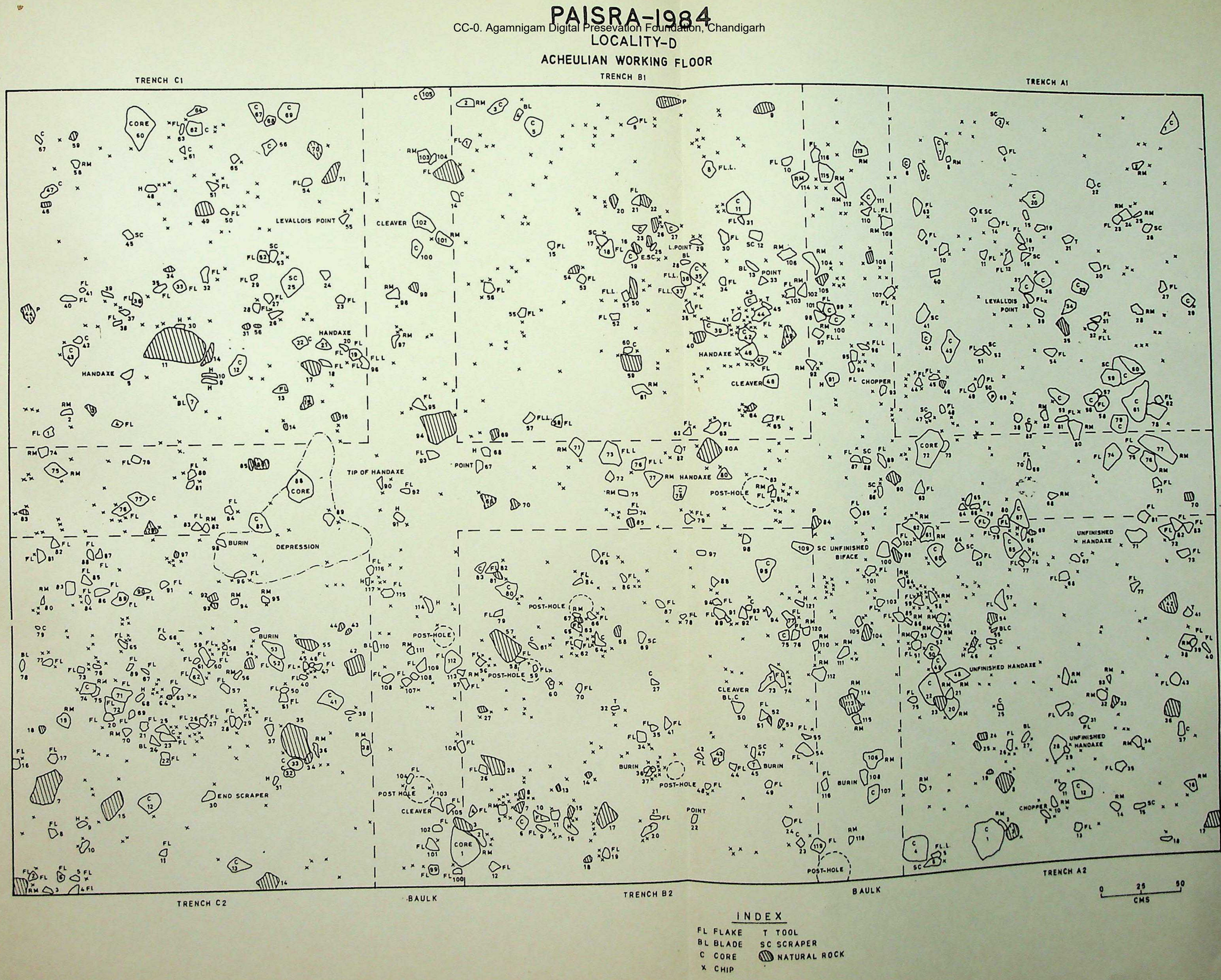
PAISRA-1984
LOCALITY-D
ACHEULIAN WORKING FLOOR
TRENCH C1
TRENCH B1
TRENCH A1
TRENCH C2
TRENCH B2
TRENCH A2
BAULK
BAULK
CORE
LEVALLOIS POINT
CLEAVER
HANDAXE
TIP OF HANDAXE
DEPRESSION
BURIN
POINT
POST-HOLE
L.POINT
CHOPPER
UNFINISHED HANDAXE
SC UNFINISHED BIFACE
END SCRAPER
0 25 50
CMS
INDEX
FL FLAKE
BL BLADE
C CORE
× CHIP
T TOOL
SC SCRAPER
NATURAL ROCK

Fig. 7. Plan of Acheulian floor in Trenches A,B & C (1-2) of Locality D.

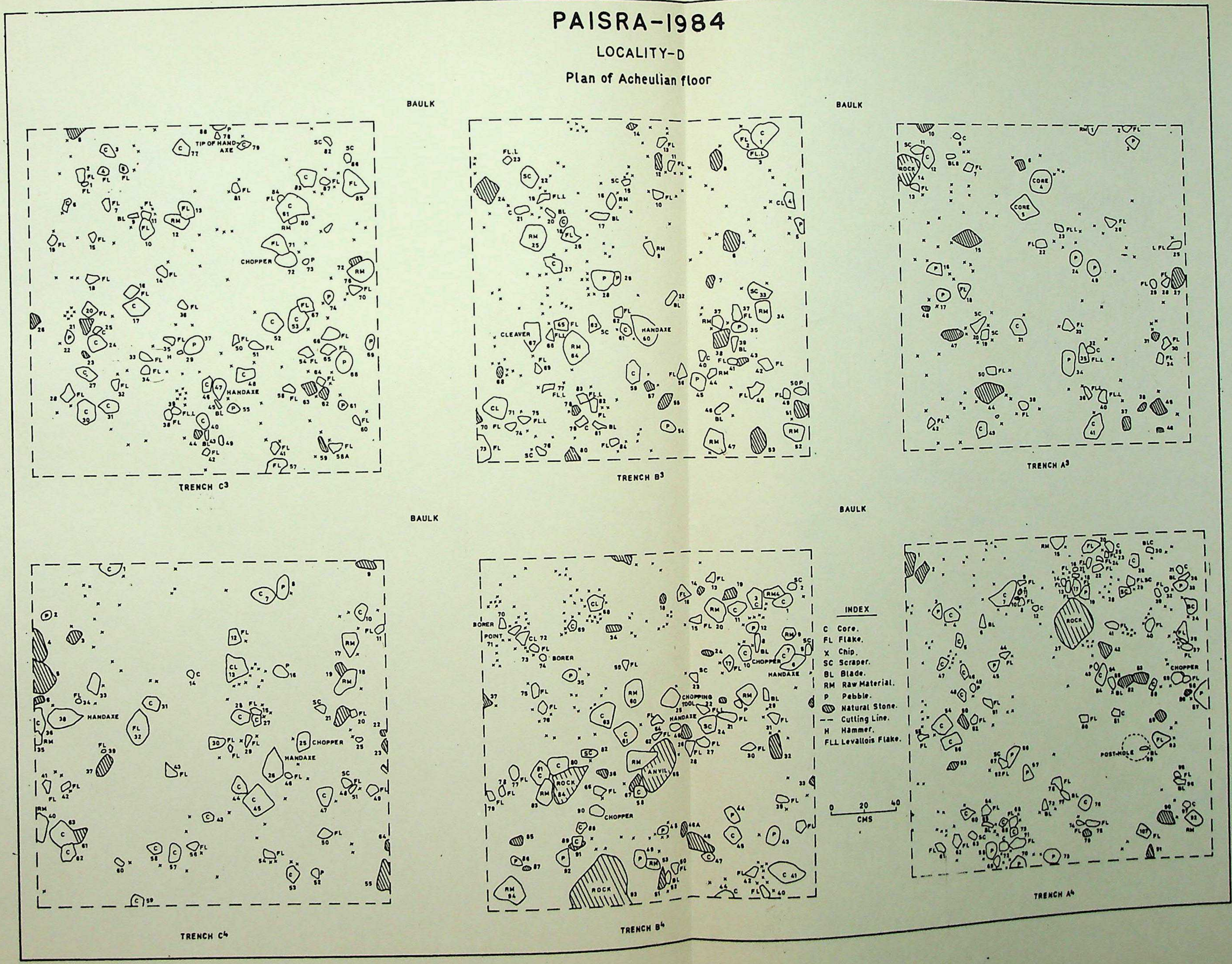
PAISRA-1984
LOCALITY-D
Plan of Acheulian floor
BAULK
BAULK
TRENCH C³
TRENCH B³
TRENCH A³
BAULK
BAULK
TRENCH C⁴
TRENCH B⁴
TRENCH A⁴
TIP OF HAND AXE
CHOPPER
HANDAXE
CLEAVER
CORE
ROCK
BORER
POINT
CHOPPING TOOL
ANVIL
POST-HOLE
INDEX
C Core.
FL Flake.
x Chip.
SC Scraper.
BL Blade.
RM Raw Material.
P Pebble.
Natural Stone.
Cutting Line.
H Hammer.
FLL Levallois Flake.
0 20 40
CMS

Fig. 8. Plan of Acheulian floor in Trenches A,B & C (3-4) of Locality D.

posed surface (Figs. 9 & 11). However, the last named area proved much richer in finished tools, particularly handaxes and cleavers, than the excavated trenches of the locality. A number of boulders and smaller quartzite pieces were also seen at various intervals on the entire habitational floor of the excavated trenches, as well as the exposed surface. They served both as raw material as well as anvils, since artefact clusters alongwith a very large number of chips appear mostly in the vicinity of large lumps of rocks. That the entire floor was indeed the working cum habitational area of the Acheulian inhabitants is amply demonstrated by the occurrence of occasional handaxes, cleavers, other implements, and associated debitage, as well as post-holes.

Table 8

Distribution of Tool-types in the Trenches A of Locality D

Type	Count	%	Artefact numbers
Chopper	4	9.30	(A-2) 9; (A-3) 3; (A-4) 34, 59
Unfinished biface	4	9.30	(A-1) 65; (A-2) 28, 48, 71
Side scraper	4	9.30	(A-1) 10; (A-2) 50; (A-4) 28, 67
Convex side scraper	8	18.60	(A-1) 41, 59; (A-2) 15, 49; (A-3) 19, 29, 55, 93
Marginally retouched blade	1	2.32	(A-4) 8
Notched flake	6	13.95	(A-1) 16, 52; (A-2) 33, 41; (A-3) 34, 42
Burin atypical	1	2.32	(A-4) 96
Flake with retouched top	3	7.1	(A-1) 11; (A-3) 11, 40
End scraper	4	9.30	(A-1) 13, 47; (A-2) 6; (A-4) 75
Core scraper	1	2.32	(A-1) 26
Partially retouched flake	7	16.27	(A-1) 54, 75; (A-2) 18, 45, 78; (A-3) 39; (A-4) 51
Total	**43**	**99.95**	

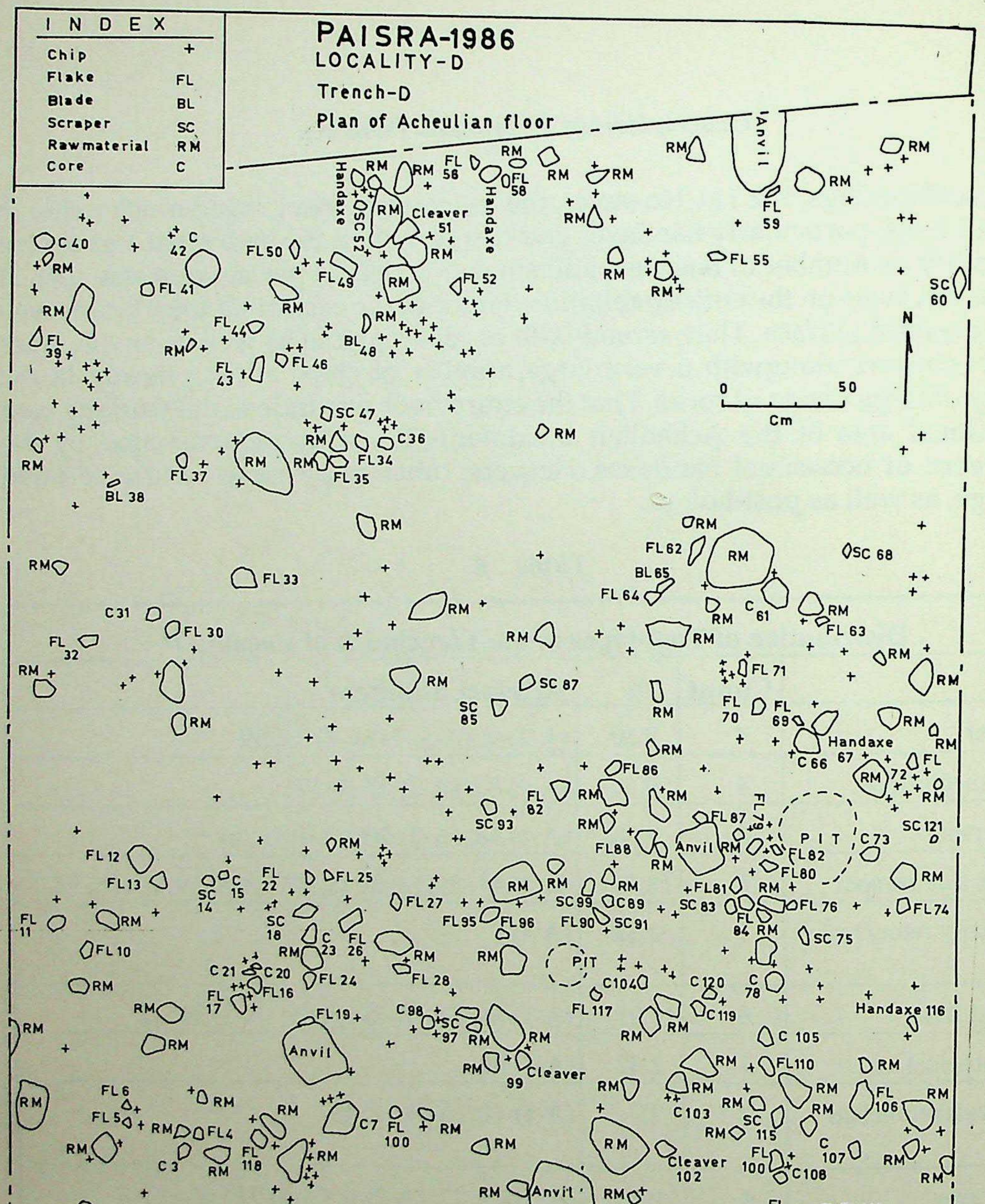
INDEX
Chip +
Flake FL
Blade BL
Scraper SC
Rawmaterial RM
Core C
PAISRA-1986
LOCALITY-D
Trench-D
Plan of Acheulian floor
N
0 50
Cm

Fig. 9. Plan of Acheulian floor in Trench D of Locality D.

Table 9

Distribution of Core-types in the Trenches A of Locality D

Type	Count	%	Artefact numbers
Blade core	3	5.66	(A-1) 1, 22; (A-2) 55
Levallois core	15	28.30	(A-1) 5, 29, 36, 42, 53, 56; (A-2) 12; (A-3) 9, 12; (A-4) 1, 48, 56, 66, 72, 76
Prepared non-Levallois core	12	22.64	(A-2) 4, 25, 28, 65, 67; (A-3) 21, 32; (A-4) 12, 54, 73, 81, 84
Partially prepared core	17	32.07	(A-1) 37, 61, 72; (A-2) 1, 37; (A-3) 4, 5, 41, 43 (A-4) 4, 5, 7, 26, 34, 46, 66, 68
Irregular core	6	11.32	(A-1) 83; (A-2) 22, 60; (A-4) 25, 60, 66
Total	**53**	**99.99**	

Table 10

Distribution of Blank-types in the Trenches A of Locality D

Type	Count	%	Artefact numbers
Blade	11	11.22	(A-2) 27, 85; (A-3) 8; (A-4) 6, 36, 65, 72, 73, 77, 85, 96
Levallois point	1	1.02	(A-1) 38
Levallois flake	17	17.34	(A-1) 38, 54, 71; (A-2) 51, 81; (A-3) 23, 25, 35, 36, 40; (A-4) 18, 22, 32, 44, 52, 62, 64
Prepared non-Levallois flake	12	12.24	(A-1) 45, 48, 62, 63, 95; (A-2) 30; (A-3) 22; (A-4) 16, 20, 66, 71, 74
Dressing flake (Primary)	25	25.51	(A-1) 9, 12, 51, 64; (A-2) 5, 11, 31, 77, 80, 82; (A-3) 2, 7, 13, 30; (A-4) 9, 13, 13, 21, 23, 24, 35, 36, 58, 78, 80
Partially prepared	13	13.26	(A-1) 23, 30, 49, 70; (A-2) 40, 56,63, 68, 72, 73, 83; (A-3) 18, 33
Biface dressing	5	5.10	(A-1) 3, 50; (A-2) 26, 27, 59

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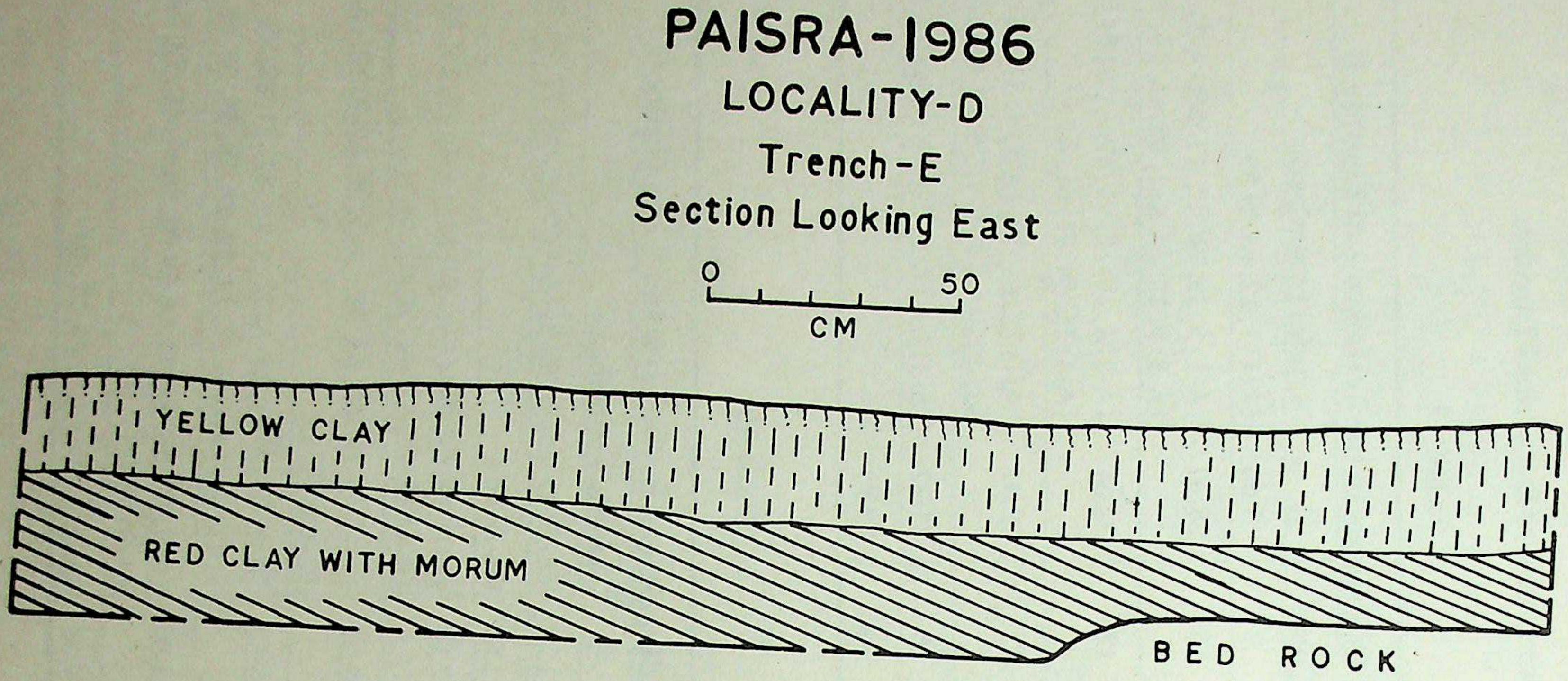
PAISRA-1986
LOCALITY-D
Trench-E
Section Looking East
0
50
CM
YELLOW CLAY
RED CLAY WITH MORUM
BED ROCK

Fig. 10. Section of Trench E of Locality E D.

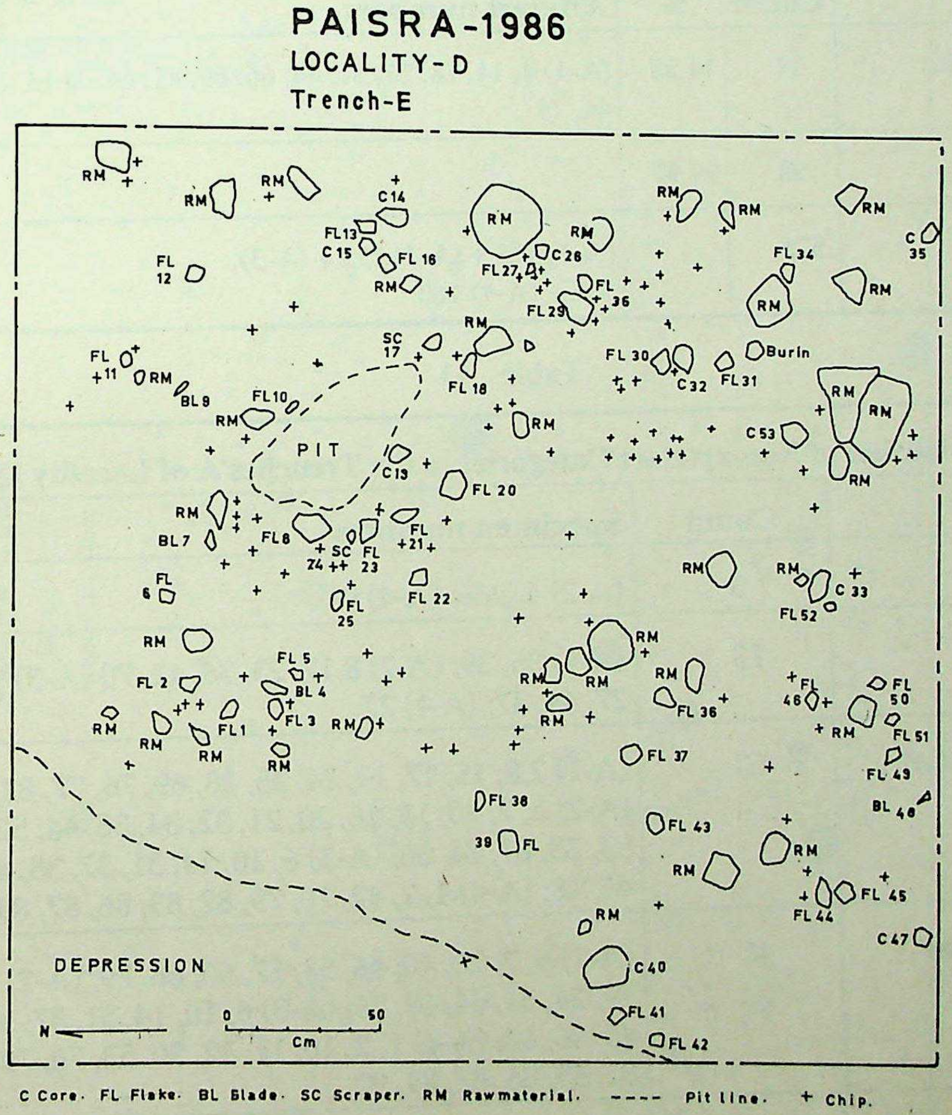
PAISRA-1986
LOCALITY-D
Trench-E
PIT
DEPRESSION
N
0
50
Cm
RM
FL 12
C 14
FL13
C 15
FL 16
C 26
FL27
FL 29
FL 36
C 35
FL 34
Burin
FL 30
C 32
FL 31
FL 11
BL 9
FL10
SC 17
FL 18
C 19
FL 20
C 53
BL 7
FL 8
SC 24
FL 23
FL 21
FL 6
FL 25
FL 22
C 33
FL 52
FL 5
BL 4
FL 2
FL 1
FL 3
FL 36
FL 46
FL 50
FL 51
FL 49
BL 48
FL 37
FL 38
39 FL
FL 43
FL 44
FL 45
C47
C 40
FL 41
FL 42
C Core. FL Flake. BL Blade. SC Scraper. RM Rawmaterial. ---- Pit line. + Chip.

Fig. 11. Plan of Acheulian floor in Trench E of Locality D.

Distribution of Blank-types in the Trenches A of Locality D

Type	Count	%	Artefact numbers
Broken flake	14	14.28	(A-1) 4, 14, 18, 27, 31, 44, 66, 69, 81; (A-2) 13, 35, 43, 46, 75
Total	**98**	**99.97**	
Chips	575		(A-1) 125 + (A-2) 155 + (A-3) 135 + (A-4) 160

Table 11

Distribution of Non-artefact Categories in the Trenches A of Locality D

Category	Count	Specimen numbers
Hammer	3	(A-2) 47, 66; (A-4) 91
Anvil	13	(A-1) 35, 39; (A-2) 8,17, 23, 36, 42, 70 (A-3) 15, 27, 44, 47; (A-4) 27
Raw material	50	(A-1) 2,8, 15, 17, 19, 24, 25, 28, 69, 76, 77, 82, 83; (A-2) 2, 7, 10, 14, 16, 20, 21, 32, 34, 38, 44, 52, 53, 58, 61, 84, 86; (A-3) 6, 10, 14, 31, 37, 38, 45, 46, 48; (A-4) 1, 2, 42, 70, 79, 82, 83, 86, 87, 89, 90
Stone pieces	41	(A-1) 6, 7, 20, 40, 46, 53, 57, 60, 68, 79; (A-2) 3, 19, 24, 54, 64, 69, 76; (A-3) 6, 10, 14, 31, 37, 38, 45, 46, 48; (A-4) 1, 2, 10, 11, 42, 50, 53, 70, 79, 82, 83, 86, 87, 89, 90
Pebble	20	(A-1) 34, 69, 73, 78; (A-3) 3, 16, 17, 24, 34, 49; (A-4) 3, 19, 33, 43, 45, 49, 56, 57, 67, 71
Total	**127**	

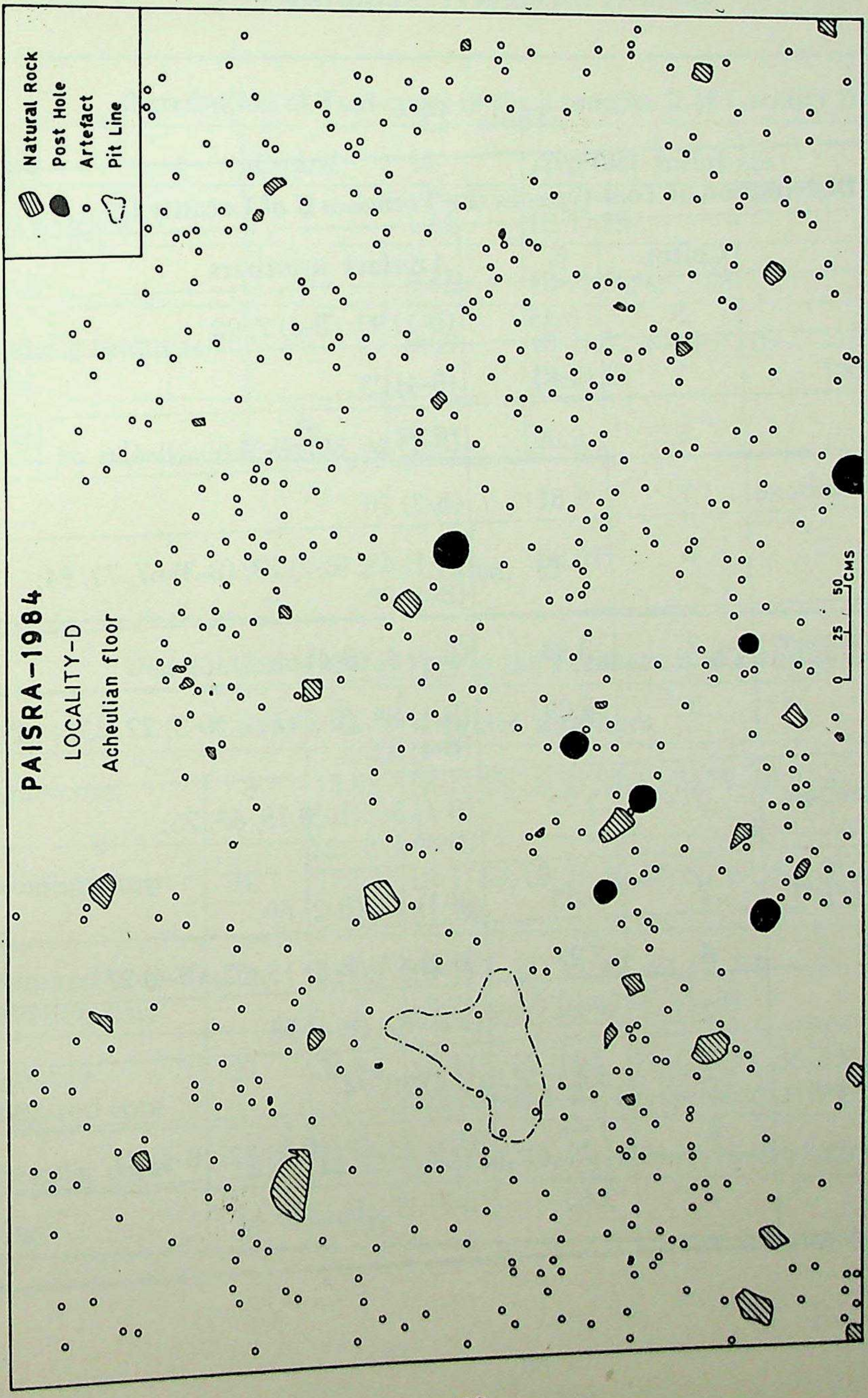
PAISRA-1984
LOCALITY-D
Acheulian floor
Natural Rock
Post Hole
Artefact
Pit Line
0
25
50
CMS

Fig. 12. Distribution of post-holes in Locality D.

Table 12

Distribution of Tool-types in the Trenches B of Locality D

Type	Count	%	Artefact numbers
Chopper	3	5.45	(B-1) 93; (B-4) 7, 90
Chopping tool	1	1.81	(B-4) 25
Handaxe	5	9.09	(B-1) 46, 80; (B-3) 60; (B-4) 6, 46
Unfinished handaxe	1	1.81	(B-2) 20
Cleaver	6	10.90	(B-1) 48; (B-2) 73; (B-3) 67, 71, 84; (B-4) 72
Unfinished cleaver	2	3.63	(B-3) 4; (B-4) 68
Convex side scraper	5	9.09	(B-1) 88; (B-2) 109; (B-3) 22, 33; (B-4) 82
Other side scrapers	7	12.72	(B-1) 86; (B-3) 15, 63, 76; (B-4) 2, 5, 24
Transverse scraper	2	3.63	(B-1) 12; (B-2) 69
Notched flake	4	7.27	(B-2) 47; (B-3) 13, 62; (B-4) 27
Denticulate	2	3.63	(B-3) 82; (B-4) 28
Borer atypical	2	3.63	(B-4) 70, 74
Point	4	7.27	(B-1) 33, 67; (B-2) 22; (B-4) 71
Flake with retouched top	2	3.63	(B-1) 17; (B-4) 23

Distribution of Tool-types in the Trenches B of Locality D

Type	Count	%	Artefact numbers
End scraper	1	1.81	(B-1) 25
Burin	3	5.45	(B-2) 36, 45, 108
Partially retouched flake	5	9.09	(B-1) 31, 62, 101; (B-2) 41; (B-4) 40
Total	**55**	**99.91**	

Table 13

Distribution of Core-types in the Trenches B of Locality D

Types	Count	%	Artefact numbers
Blade core	8	14.03	(B-1) 23; (B-2) 50; (B-3) 79; (B-4) 61, 63, 78, 80, 88
Levallois core	10	17.54	(B-1) 39; (B-2) 24, 27, 60, 64, 83; (B-4) 47, 58, 81, 89
Prepared non-Levallois core	12	21.05	(B-1) 3, 11, 35, 42, 60, 78, 64; (B-2) 9, 37; (B-4) 11, 41, 81
Partially prepared core	21	36.84	(B-1) 5, 27, 100, 111; (B-2) 1, 36, 75, 80, 93, 95, 105; (B-3) 1, 21, 27, 39, 40, 61; (B-4) 1, 10, 45, 80
Irregular core	6	10.52	(B-1) 14, 19, 43; (B-3) 18; (B-4) 44, 89
Total	**57**	**99.98**	

Table 14

Distribution of Blank-types in the Trenches B of Locality D

Type	Count	%	Artefact numbers
Blade	12	8.27	(B-1) 4, 13, 28; (B-3) 17, 20, 32, 39, 46, 81; (B-4) 8, 29, 52
Levallois point	6	4.13	(B-1) 29; (B-2) 9, 44, 59, 63; (B-4) 23
Levallois flake	29	20.00	(B-1) 8, 32, 36, 37, 44, 51, 57, 73, 85, 96, 97, 110; (B-2) 11, 21, 42, 43, 52, 53, 105; (B-3) 2, 3, 19, 23, 66, 75, 77, 83; (B-4) 22, 50
Prepared non-Levallois	17	11.72	(B-1) 58, 63, 76, 79, 103; (B-2) 4, 8, 10, 12, 54, 72, 92; (B-3) 11, 49, 65, 73; (B-4) 13
Dressing flake (Primary)	26	17.93	(B-1) 1, 30, 47, 52, 95, 99, 116; (B-2) 14, 19, 26, 49, 79, 85, 103; (B-3) 26, 36, 41, 74; (B-4) 16, 17, 21, 30, 31, 39, 68, 73
Partially prepared	26	17.93	(B-1) 10, 15, 18, 21, 34, 56, 81, 87, 94, 107; (B-2) 35, 41, 48, 53, 58, 62, 65, 66, 96, 99, 102; (B-3) 10; (B-4) 66, 69, 78, 90
Biface dressing flake	20	13.79	(B-1) 6, 38, 53, 55, 65, 74, 89; (B-2) 34, 51, 55, 74, 86, 94, 116, 119; (B-3) 42; (B-4) 42, 75, 76, 77
Broken flake	9	6.20	(B-2) 71, 72, 82, 84, 88, 101; (B-3) 48, 56, 69
Total	**145**	**99.97**	
Chips	891		(B-1) 285 + (B-2) 254 + (B-3) 169 + (B-4) 182

Table 15

Distribution of Non-artefact Categories in the Trenches B of Locality D

Category	Count	Specimen numbers
Hammer	10	(B-1) 24, 68, 91, 108; (B-2) 9, 16, 97, 121; (B-3) 68; (B-4) 24
Anvil	15	(B-1) 9, 16, 20, 40, 54, 59, 80A, 90; (B-2) 57, 113; (B-3) 6, 68; (B-4) 32, 65, 84
Raw material	49	(B-1) 2, 61, 71, 75, 77, 83, 92, 98, 102, 104, 106, 107, 113, 114, 115; (B-2) 2, 5, 6, 7, 8, 14, 67, 94, 99, 101, 105, 110, 111, 112, 115, 118, 120; (B-3) 9, 16, 25, 28, 34, 37, 44, 47, 52, 64; (B-4) 4, 9, 20, 53, 60, 83, 94
Stone pieces	44	(B-1) 22, 26, 45, 64, 66, 105; (B-2) 3, 15, 18, 25, 52, 68, 81, 98, 104, 114; (B-3) 7, 8, 12, 14, 24, 43, 51, 53, 55, 57, 70, 80; (B-4) 14, 18, 19, 26, 33, 34, 36, 37, 46, 51, 67, 85, 87, 91, 93, 94
Pebble	22	(B-1) 7, 84; (B-3) 7, 8, 12, 14, 24, 43, 51, 53, 55, 57, 70, 80; (B-4) 12, 35, 43, 44, 48, 49, 86, 92
Total	**140**	

Table 16

Distribution of Tool-types in the Trenches C of Locality D

Type	Count	%	Artefact numbers
Chopper	2	10.00	(C-3) 72; (C-4) 25
Chopping tool	1	5.00	(C-4) 1

Distribution of Tool-types in the Trenches C of Locality D			
Type	**Count**	**%**	**Artefact numbers**
Handaxe	2	10.00	(C-3) 47, 78
Unfinished handaxe	3	15.00	(C-4) 7, 26, 38
Unfinished cleaver	1	5.00	(C-4) 13
Side scraper	3	15.00	(C-3) 46; (C-4) 21, 48
Transverse scraper	1	5.00	(C-3) 82
Core scraper	1	5.00	(C-1) 1
Notched flake	2	10.00	(C-3) 20, 84
Partially retouched flake	4	20.00	(C-1) 27, 41; (C-3) 57; (C-4) 49
Total	**20**	**100.00**	

Table 17

Distribution of Core-types in the Trenches C of Locality D			
Type	**Count**	**%**	**Artefact numbers**
Blade core	5	6.94	(C-1) 22, 69, 88, 100; (C-4) 10
Levallois core	10	13.88	(C-1) 43, 60, 62, 67, 87; (C-3) 39; (C-3) 30, 40, 41; (C-4) 31
Prepared non-Levallois core	8	11.11	(C-1) 10, 12; (C-2) 12; (C-3) 3, 17, 48; (C-4) 7, 36

Distribution of Core-types in the Trenches C of Locality D

Type	Count	%	Artefact numbers
Partially prepared core	42	58.33	(C-1) 15, 42, 47, 61, 65, 66, 77, 89, 105; (C-2) 13, 32, 33, 41, 74, 79; (C-3) 2, 6, 24, 25, 27, 31, 52, 53, 61, 77, 78, 83; (C-4) 1, 14, 24, 28, 32, 43, 44, 45, 47, 53, 57, 58, 59, 62, 63
Irregular core	7	9.72	(C-1) 16, 31, 34, 59, 70, 85, 99
Total	**72**	**99.98**	

Table 18

Distribution of Blank-types in the Trenches C of Locality D

Type	Count	%	Artefact numbers
Blade	7	4.66	(C-1) 7; (C-2) 24, 78, 110; (C-3) 9, 43, 45
Levallois point	2	1.33	(C-1) 5; (C-3) 56
Levallois flake	2	1.33	(C-1) 96; (C-3) 39
Prepared non-Levallois flake	40	26.66	(C-1) 4, 23, 26, 35, 50, 95; (C-2) 4, 6, 17, 47, 56, 62, 63, 66, 84, 85, 89, 99, 104; (C-3) 11, 20, 22, 29, 50, 51, 52, 61, 71, 77, 81, 86, 91, 105, 107, 115; (C-4) 1, 2, 11, 15, 16
Dressing flake	37	24.66	(C-1) 13, 18, 18, 28, 32, 33, 63, 76, 78, 83, 84, 92, 104; (C-2) 25, 59, 60, 73, 75, 76; (C-3) 5, 7, 10, 14, 19, 28, 32, 36, 38, 42, 50, 65, 66; (C-4) 34, 46, 50, 51, 55

Distribution of Blank-types in the Trenches C of Locality D

Type	Count	%	Artefact numbers
Partially prepared flake	17	11.33	(C-1) 40, 52, 54; (C-2) 23, 24, 26, 45, 46, 90, 100, 108; (C-3) 18, 33, 70, 71, 85, 87
Biface dressing flake	23	15.33	(C-1) 1, 36, 37, 51, 80; (C-2) 2, 5, 8, 16, 21, 27, 28, 37, 40, 57, 60, 65, 66, 67, 82, 88, 106, 116
Broken flake	22	14.66	(C-3) 4, 13, 34, 35, 54, 58, 60, 69, 81; (C-4) 11, 12, 13, 15, 20, 27, 29, 30, 32, 39, 43, 54, 56
Total	**150**	**99.96**	
Chips	480		(C-1) 126 + (C-2) 124+ (C-3) 101+ (C-4) 129

Table 19

Distribution of Non-artefact Categories in the Trenches C of Locality D

Category	Count	Specimen numbers
Hammer	14	(C-1) 8, 10, 30, 48, 91; (C-2) 9, 31, 43, 68, 114, 117; (C-3) 29, 44, 59
Anvil	12	(C-1) 11, 49, 71, 94; (C-2) 1, 7, 14, 15, 35, 42, 54, 55
Raw material	29	(C-1) 2, 39, 58, 62, 64, 74, 75, 70, 82, 93, 97, 98, 101, 103; (C-2) 3, 19, 36, 38, 56, 69, 70, 75, 80, 94, 95, 113; (C-3) 12, 76, 80

Distribution of Non-artefact Categories in the Trenches C of Locality D

Category	Count	Specimen numbers
Stone pieces	51	(C-1) 14, 15, 17, 46, 56, 79, 81, 86; (C-2) 9, 10, 18, 31, 34, 37, 43, 44, 46, 64, 68, 76, 83, 92, 93, 97, 102; (C-3) 8, 21, 23, 26, 41, 44, 49, 62, 63, 75, 88; (C-4) 3, 4, 5, 6, 9, 19, 22, 23, 24, 33, 37, 50, 60, 61, 64
Pebble	13	(C-1) 44; (C-3) 22, 37, 55, 61, 68, 69, 73, 74; (C-4) 2, 8, 16, 52
Total	**119**	

Table 20

Distribution of Tool-types in the Trenches D of Locality D

Type	Count	%	Artefact numbers
Handaxe	2	10.00	67, 116
Cleaver	3	15.00	51, 99, 102
Scraper on flake	15	75.00	14, 18, 47, 52, 60, 68, 75, 83, 85, 91, 93, 97, 99, 115, 121
Total	**20**	**100.00**	

Table 21

Distribution of Core-types in Trenches D of Locality D

Type	Count	%	Artefact numbers
Blade core	3	12.00	36, 40, 107
Levallois core	6	24.00	20, 61, 66, 98, 119, 120

Distribution of Core-types in Trenches D of Locality D

Type	Count	%	Artefact numbers
Prepared non-Levallois core	8	32.00	8, 15, 31, 42, 78, 89, 108, 114
Partially worked core	5	20.00	3, 7, 23, 103, 104
Irregular core	3	12.00	21, 73, 105
Total	**25**	**100.00**	

Table 22

Distribution of Blank-types in Trenches D of Locality D

Type	Count	%	Artefact numbers
Blade	3	3.90	38, 48, 65
Prepared non-Levallois flake	27	36.00	1, 2, 5, 10, 11, 12, 13, 16, 31 42, 43, 44, 45, 59, 62, 63, 70, 71, 76, 81, 82, 84, 90, 95, 106, 110, 111
Partially prepared flake	23	30.60	3, 6, 8, 19, 20, 21, 22, 23, 29, 30, 36, 38, 39, 49, 55, 56, 72, 79, 86, 87, 112, 117, 118
Levallois flake	7	9.30	4, 34, 37, 64, 69, 88, 115
Dressing flake	9	12.00	8, 27, 41, 51, 52, 74, 80, 100, 101
Broken flake	6	8.00	25, 46, 50, 58, 96, 113
Total	**75**	**99.80**	
Chips	**37**		x

Table 23

Distribution of Tool-types in Trench E of Locality D			
Type	Count	%	Artefact numbers
Side scraper on flake	1	100.00	24
Total	**1**	**100.00**	

Table 24

Distribution of Core-types in Trench E of Locality D			
Type	Count	%	Artefact numbers
Blade core	1	10.00	32
Levallois core	2	20.00	15, 19
Prepared non-Levallois core	4	40.00	26, 33, 35, 40
Partially worked core	1	10.00	47
Irregular core	2	20.00	14, 53
Total	**10**	**100.00**	

Table 25

Distribution of Blank-types in Trench E of Locality D			
Type	Count	%	Artefact numbers
Blade	5	12.19	4, 7, 9, 17, 48

Distribution of Blank-types in Trench E of Locality D

Type	Count	%	Artefact numbers
Levallois flake	6	14.63	1, 2, 23, 25, 43, 44
Prepared non-Levallois flake	10	24.39	6, 11, 12, 13, 30, 31, 34, 39, 41, 51
Partially prepared flake	9	21.95	3, 5, 10, 16, 27, 36, 42, 45, 46
Dressing flake	7	17.07	18, 20, 21, 22, 29, 49, 50
Broken flake	4	9.75	8, 37, 38, 52
Total	**41**	**99.98**	

Locality E

The entire surface around the locality E is severely eroded, leaving a big portion of upland in the centre. In all, four trenches were laid in this locality, two in the 1984 season and the other two in 1986. One of the trenches of the earlier season was located towards the north western side of this upland, where the underlying rock formed a sort of big hump. The tool bearing layer of haematite pellets was reached in this trench at a depth of about 1.40 to 1.60 m. Most of the upper cover was formed by fluvial sandy silt with a thin compact reddish layer of decomposed rock-waste of about 20 to 45 cm thickness, directly overlying the artefact bearing level. The trench neither proved rich in artefacts nor yielded any significant evidence for structures. There was hardly any finished tool. The only artefacts encountered in this trench were a few flakes, a negligible number of cores and some chips.

The trench 1 of this locality was located some 30 m southeast of the earlier trench H. This 5 × 5 m trench yielded very significant evidence for the stratigraphy of the Paisra valley, as well as, the habitational patterns of the Acheulians. The tool-bearing layer was reached at a depth of about 2.70 to 2.80m. The total deposit was broadly divided into three layers (Fig. 13). The first layer is composed of sandy silt of colluvial origin with a maximum thickness of about 30 cm. The layer 2 was a yellowish deposit of weathered rock waste with reddish brown streaks, and was

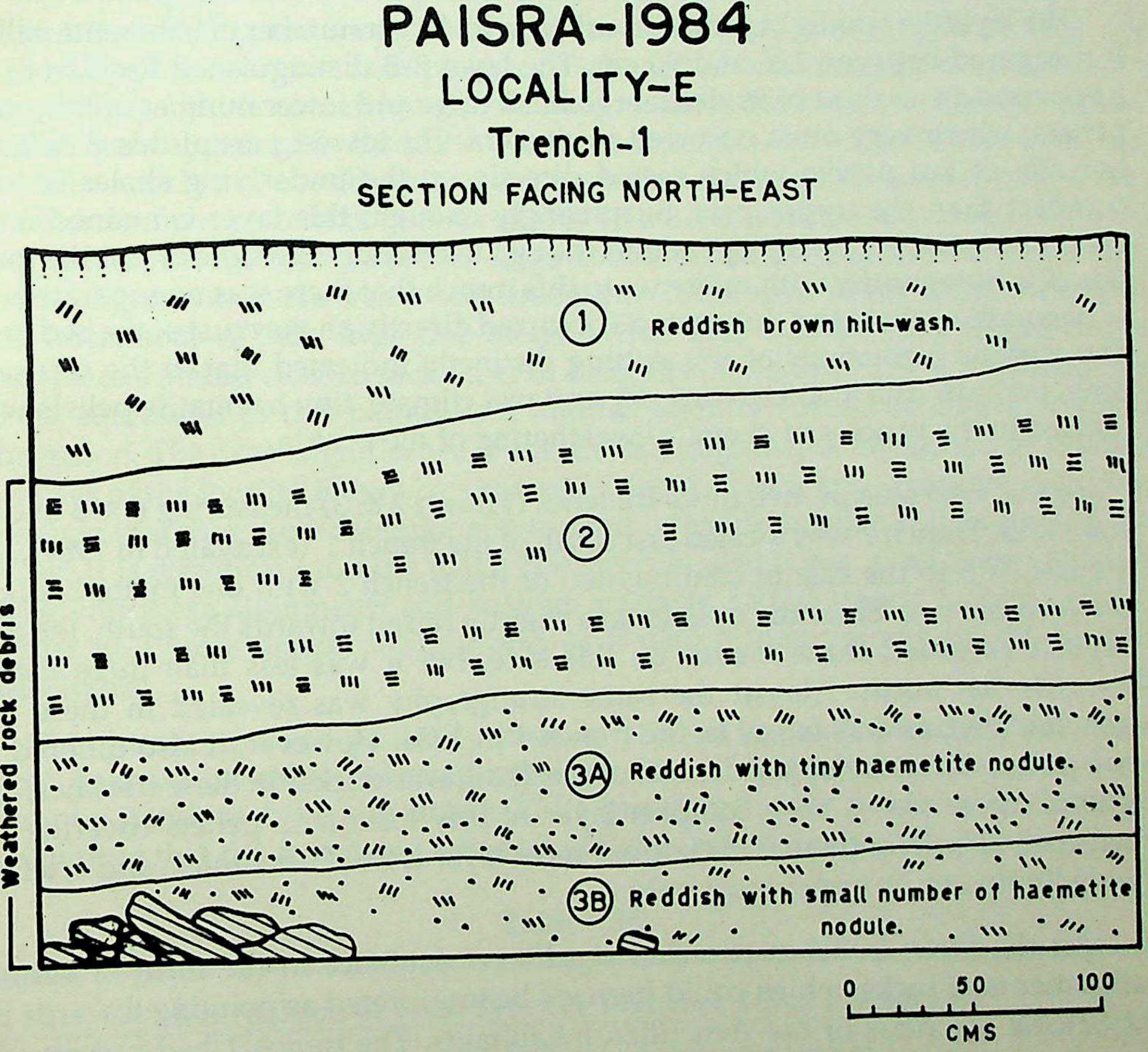
PAISRA-1984
LOCALITY-E
Trench-1
SECTION FACING NORTH-EAST
① Reddish brown hill-wash.
②
3A Reddish with tiny haemetite nodule.
3B Reddish with small number of haemetite nodule.
Weathered rock debris
0
50
100
CMS

Fig. 13. Section of Trench 1 of Locality E.

generally more compact than the first one. The layer-3 was formed by a very compact clay deposit, representing deeply weathered rock-debris. It was subdivided into three on account of different colours as well as the frequency of small haematite pellets.

The layer 3A was light yellow in colour with larger number of hamaetite pellets. It measured between 120 and 90 cm. The layer 3-B distinguished itself from the upper one on account of its definite reddish tinge and fewer number of haematite pellets, which very often occurred in clusters. The lowest part of this weathered horizon of the profile which rested directly on the underlying shales is more compact than the upper part. Surprisingly enough, this layer contained fewer haematite pellets than the upper one, though the colour was more or less the same. It is also noteworthy with reference to this trench that there was no separate layer of haematite pellets and the artefacts occurred directly on the crust of the bed-rock. The various formations of this cutting distinctly indicated that in the course of time, perhaps due to alternating dry and wet climate, tiny haematite pellets were formed in the process of chemical weathering of the profile.

In the 1986 season, two more trenches (Trench 2 & 3) measuring 6 × 3 m each were laid. Trench 2 was located just south of the trench 1 (excavated in 1984), and the trench 3 to the east in continuation of the trench 2 with one metre baulk in between the two. Since the upland was slightly raised towards the south, the total deposit exceeded three metres on this side, but it was less than three metres towards the north. Almost the same stratigraphy was revealed in these two trenches also, as was found in the trench 1 in 1984. However, it also differed on two points. First, the upper deposit of sandy silt was thicker in these trenches, and second, there was a very compact layer of tiny haematite pellets covering the bed-rock in both of them. This bottom-most layer is 7 to 30 cm thick, and artefacts were limited to its upper crust only.

All the three trenches revealed significant evidence in the form of various alignments of rocks, which could perhaps be interpreted as pointing towards the structural activities of the Acheulian inhabitants. The trench 1 had preserved a massive alignment of boulders running in northwest-southeast direction, and measuring as much as above 4 m in length (Fig. 14) This alignment rested directly on the bed-rock and was generally of a single course. However, at one place two boulders of considerable size also rested on the basal alignment. Besides, several big and small rock pieces had also been found scattered on both sides of the alignment. The possibility that some of them originally formed the second coarse of this alignment cannot be altogether ruled out. Attention may also be drawn to a few rock pieces forming a somewhat oblong pattern.

Several big and small rock-pieces appeared on the surface of haematite pellets in the trench 2 also, but they do not seem to exhibit any definite pattern (Fig. 15) In the Trench 3, however, rock pieces of various dimensions seemed to have been placed in straight or somewhat curved alingments at least at four places (Fig. 16). One of them appeared in the northwestern corner in which four blocks of stones had been kept in a row, with a big deep post-hole in between the two central stones. Another straight pattern of rocks, roughly in a north-south orientation, could be seen only a few metres away. Two large boulders had been placed on either side of this alignment. There was a post-hole some 25 cm west of the southern end of this formation. A little over one metre to the east was another alignment of rock-pieces, placed close to each other in a slightly curved pattern. Approximately 25 cm southwest of this pattern was another slightly curved structure of small dimension. The exact significance of these stone alignments unearthed in various trenches of the locality E may be a matter of debate, but it appears quite logical to presume that they were intentionally formed by the Acheulian inhabitants of the valley. It is significant to note that a few pebbles also occur in all these trenches alongwith these alignments and various artefacts. In the trench 1, four pebbles appear in a more or less straight line, as if placed intentionally by the human inhabitants.

This locality proved generally poor in artefact content. Mostly, there were cores, flakes, a few chips and a negligible number of finished tools. However, there was one handaxe from the trench 1. Its presence leaves hardly any doubt in concluding that the associated stone alignments belong to the Acheulians.

Table 26

Distribution of Tool-Types in Trenches 1-3 of Locality E

Types	Count	%	Trench	Artefact number
Chopper	1	50.00	1	10
Handaxe	1	50.00	1	12
Total	**2**	**100.00**		

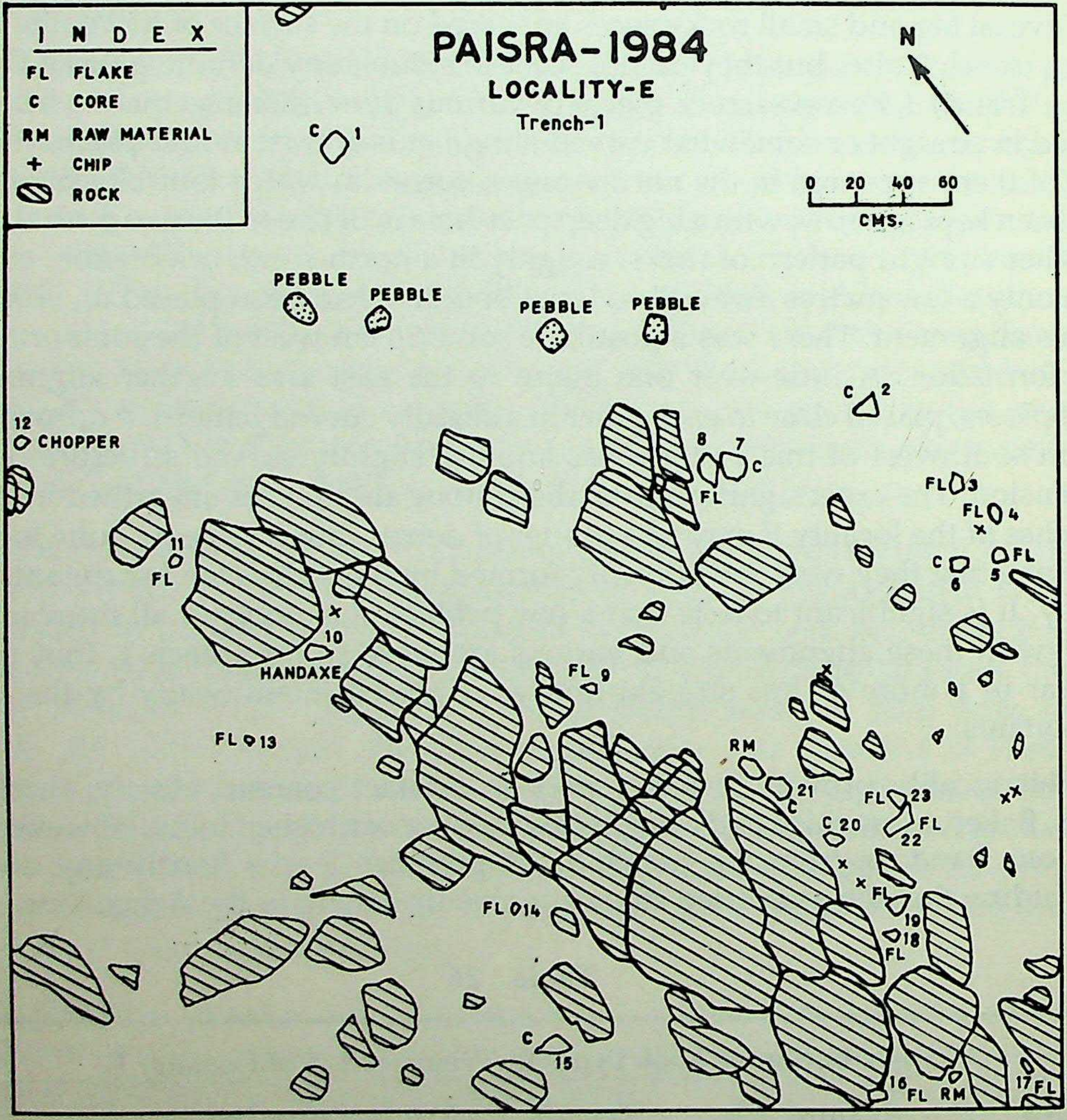
INDEX
FL FLAKE
C CORE
RM RAW MATERIAL
+ CHIP
ROCK
PAISRA-1984
LOCALITY-E
Trench-1
N
0 20 40 60
CMS.
C 1
PEBBLE
PEBBLE
PEBBLE
PEBBLE
C 2
12 CHOPPER
8 FL
7 C
FL 3
FL 4
C 6
FL 5
11 FL
10 HANDAXE
FL 9
FL 13
RM
21 C
FL 23
C 20
FL 22
FL 19
18 FL
FL 14
C 15
16 FL RM
17 FL

Fig. 14. Plan of Acheulian floor in Trench 1 of Locality E.

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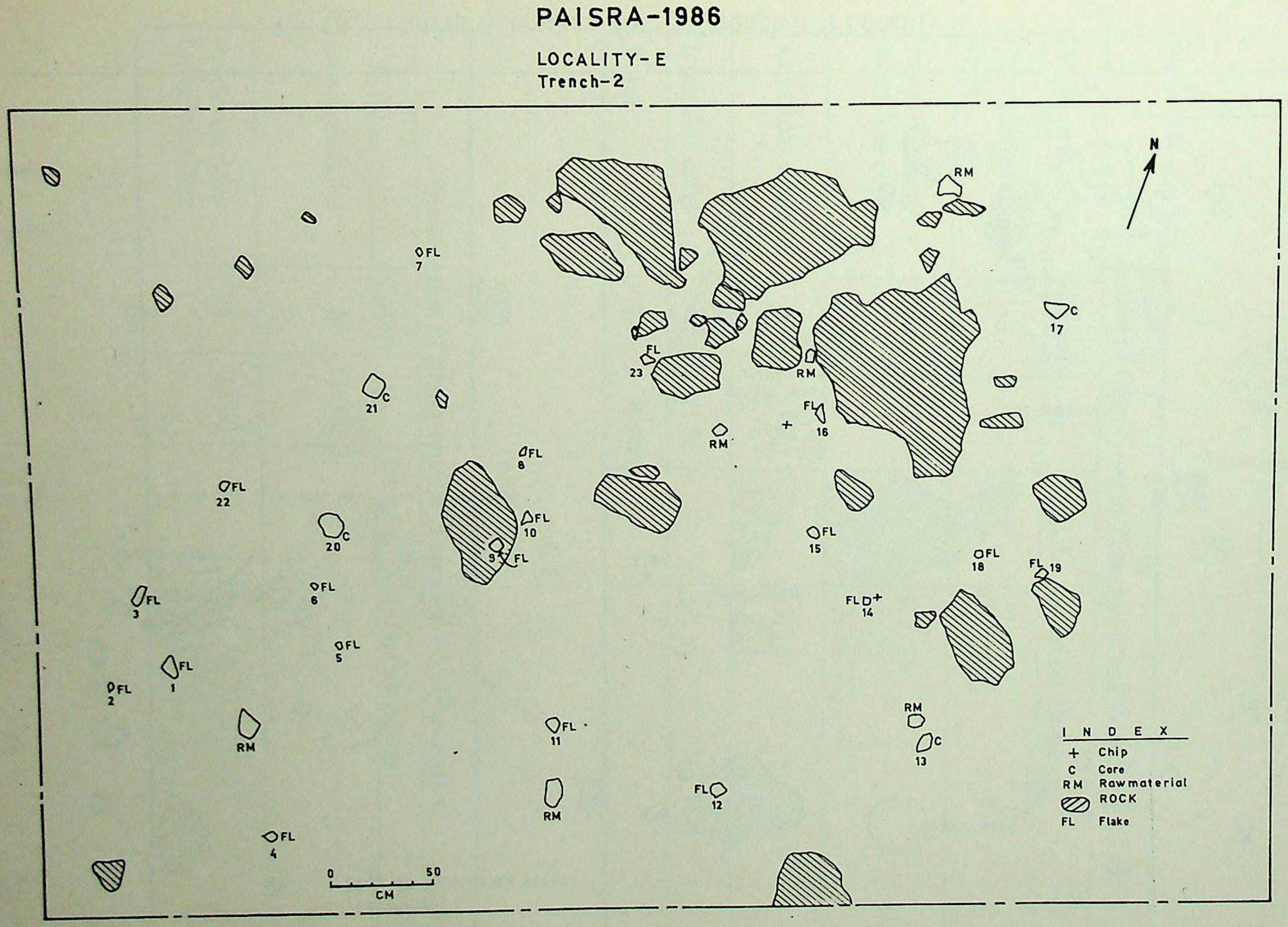

PAISRA-1986
LOCALITY-E
Trench-2
N
RM
C 17
FL 23
RM
FL 16
RM
C 21
FL 7
FL 8
FL 22
FL 10
C 20
9 FL
FL 15
FL 18
FL 19
FL 14
FL 3
FL 6
FL 5
FL 1
FL 2
RM
FL 11
RM
C 13
FL 12
RM
FL 4
0
50
CM
I N D E X
+ Chip
C Core
RM Rawmaterial
▨ ROCK
FL Flake

Fig. 15. Plan of Acheulian floor in Trench 2 of Locality E.

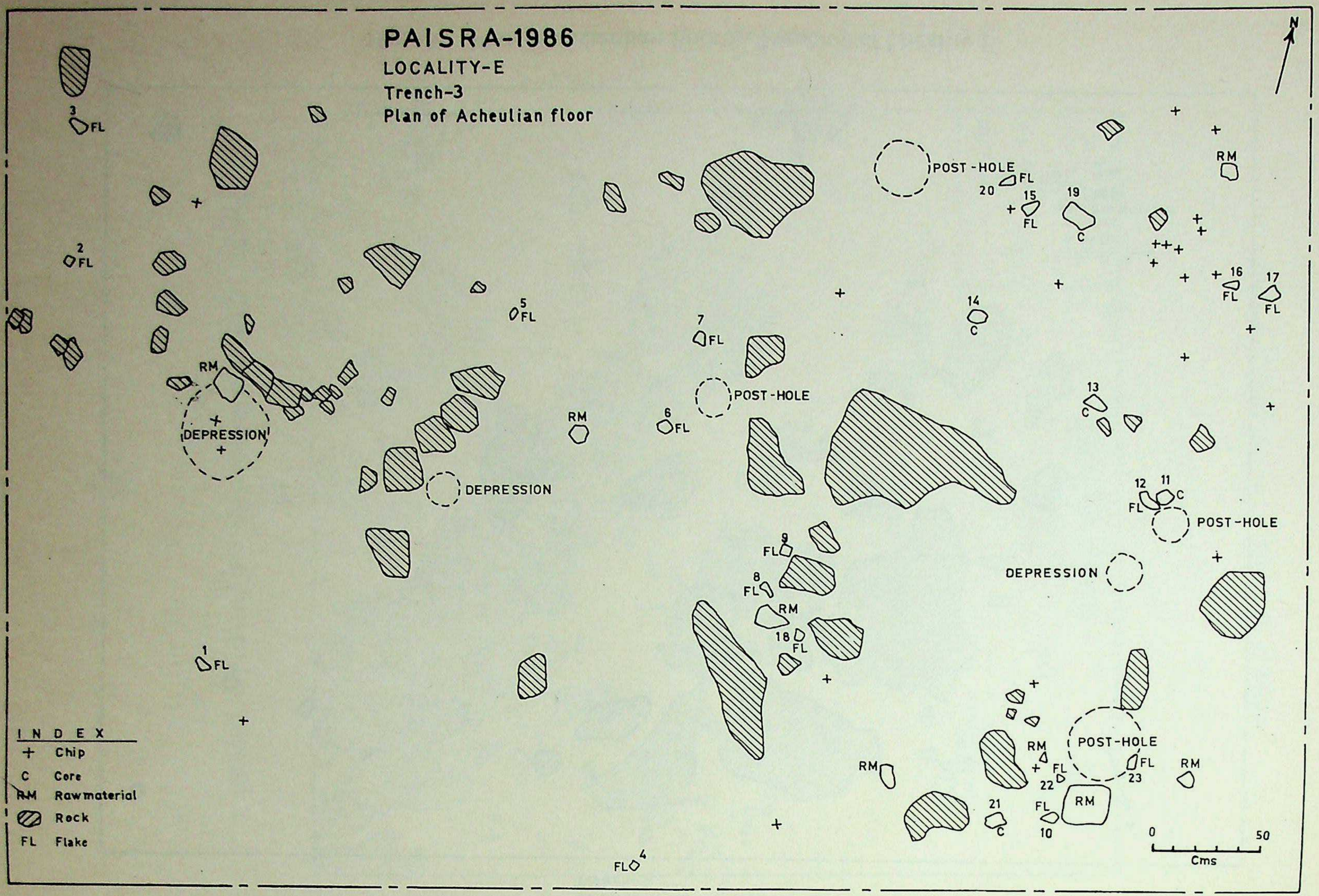

PAISRA-1986
LOCALITY-E
Trench-3
Plan of Acheulian floor
N
INDEX
+ Chip
C Core
RM Rawmaterial
▨ Rock
FL Flake
0
50
Cms
POST-HOLE
POST-HOLE
POST-HOLE
POST-HOLE
DEPRESSION
DEPRESSION
DEPRESSION
RM
FL
C
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

Fig. 16. Plan of Acheulian floor in Trench 3 of Locality E.

Table 27

Distribution of Core-types in Trenches 1-3 of Locality E

Type	Count	%	Trench	Artefact numbers
Partially prepared core	5	29.41	1	1, 15, 21
			3	11, 13
Prepared non-Levallois core	8	47.05	1	6, 7, 20
			2	21, 22
			3	14, 19, 21
Levallois core	2	11.76	2	13, 18
			1	2
Irregular core	2	11.76	2	17
Total	**17**	**99.98**		

Table 28

Distribution of Blank-types in Trenches 1-3 of Locality E

Type	Count	%	Trench	Artefact numbers
Levallois flake	8	16.00	1	11, 13
			2	9, 12, 15
			3	4, 6, 9
Prepared non-Levallois flake	21	42.00	1	3, 4, 8, 14, 17, 18, 23
			2	1, 2, 3, 6, 7, 11, 14,
			3	2, 7, 10, 16, 17, 20, 22

Distribution of Blank-types in Trenches 1-3 of Locality E

Type	Count	%	Trench	Artefact numbers
Partially prepared flake	13	26.00	1 2 3	5, 19, 22 4, 8, 16, 19, 22, 23 1, 5, 15, 23
Dressing flake	8	16.00	1 2 3	9, 16 5, 10 3, 8, 12, 18
Total	**50**	**100.00**		

Locality F

South of the locality E and across the wide gully is located another large expanse of upland which was labelled as locality F. A massive trench of 30 × 5 m was planned in the northern fringes of this upland. The trench started in length from the flat top of the upland and covered the entire slope upto the surface of the gully. The excavation revealed that at a depth of about 65 to 90 cm occurred a very thin layer of Mesolithic habitation. However, this habitation floor was missing in the slopes of the locality for obvious reasons. Consequently, 11 × 5 m area of the plain of the upland, which preserved Meso-lithic habitation, was excluded from deep digging for Acheulian habitation, and the bed-rock was reached only in the remaining part of the trench. Here also the upper 0.8 to 1.05 m of the profile was formed by yellowish brown colluvial deposit. The second layer, a little less than a metre thick, was that of weathered rock-waste, characterized by reddish tinge of dehydrated iron oxide and occasional haematite pellets. The third layer differed from the preceding one mainly on account of its more compact nature and higher frequency of haematite pellets. The compact deposit of haematite pellets resting on the bed-rock was as much as 35 to 40 cm in thickness at certain places, but it did not exceed 10 cm near the lower tip of the slope. As observed in other trenches, the artefacts were confined to the upper 10 cm of this deposit.

The upper habitational layer found in the lower part of the yellowish brown colluvial deposit turned out to be a working floor of a Mesolithic people. When it was found that the entire area of 11 × 5 m was littered with debitage of the Mesolithic inhabitants, it was decided to extend the area of excavation further, with a view to having a better idea of the way of life of the people. Consequently, one trench of 5 × 5 m dimension each was planned on both the eastern and western sides of the excavated area. These too had also preserved evidence of the Mesolithic horizon. The entire area, barring the western projection, was found exceptionally rich in debitage, occurring on the floor in clusters. The debitage included mostly chips, flakes, some finished and unfinished cores and a few blades and bladelets. Since the number of finished tools found on the entire surface was very limited (only 26 specimens were recovered), and in comparison chips and flakes produced in the process of manufacturing cores occurred in overhelmingly larger number, the obvious conclusion was that the floor unearthed in this locality represented a working area of the Mesolithic inhabitants. It is worth pointing out that besides several big and small clusters of artefacts, there was also a number of fire places on the floor. It is also noteworthy that many of the artefact clusters were found close to the fire places, and in fact, some artefacts were actually found lying in the fire places. This leads us to presume that artefact clusters and the fire places were closely interrelated. It appears that during the process of manufacturing implements, the raw material was frequently heated. Furthermore, many quartzite pieces of different sizes were found paved beneath one of the fire places. It could also perhaps be deduced from the available evidence that implements were heated particularly before carrying out a finer retouch on them. On one of the small flakes recovered from the vicinity of a big fire place, there were some long shallow parallel scars which might have been the result of flaking by pressure technique. In view of the fact that the raw material of artefacts was a fine grained quartzite, flaking by pressure technique and fine abrupt retouching on the margins of bladelets could not have been carried out without heating the specimens before hand. In one of the fire places, located almost in the centre of the 11 × 5 area, there were several conical lumps of burnt earth. This appears to indicate that lumps of wet earth were first placed on the fire place and then the fire was built on it. Similar evidence came from one more fire place. It appears logical to presume that the earthen lumps were intentionally placed in the fire place for the specific purpose of roasting meat, lest the liquid oozing out of the meat pieces during the process of roasting could put off the fire. However, the presumption could not be substan-

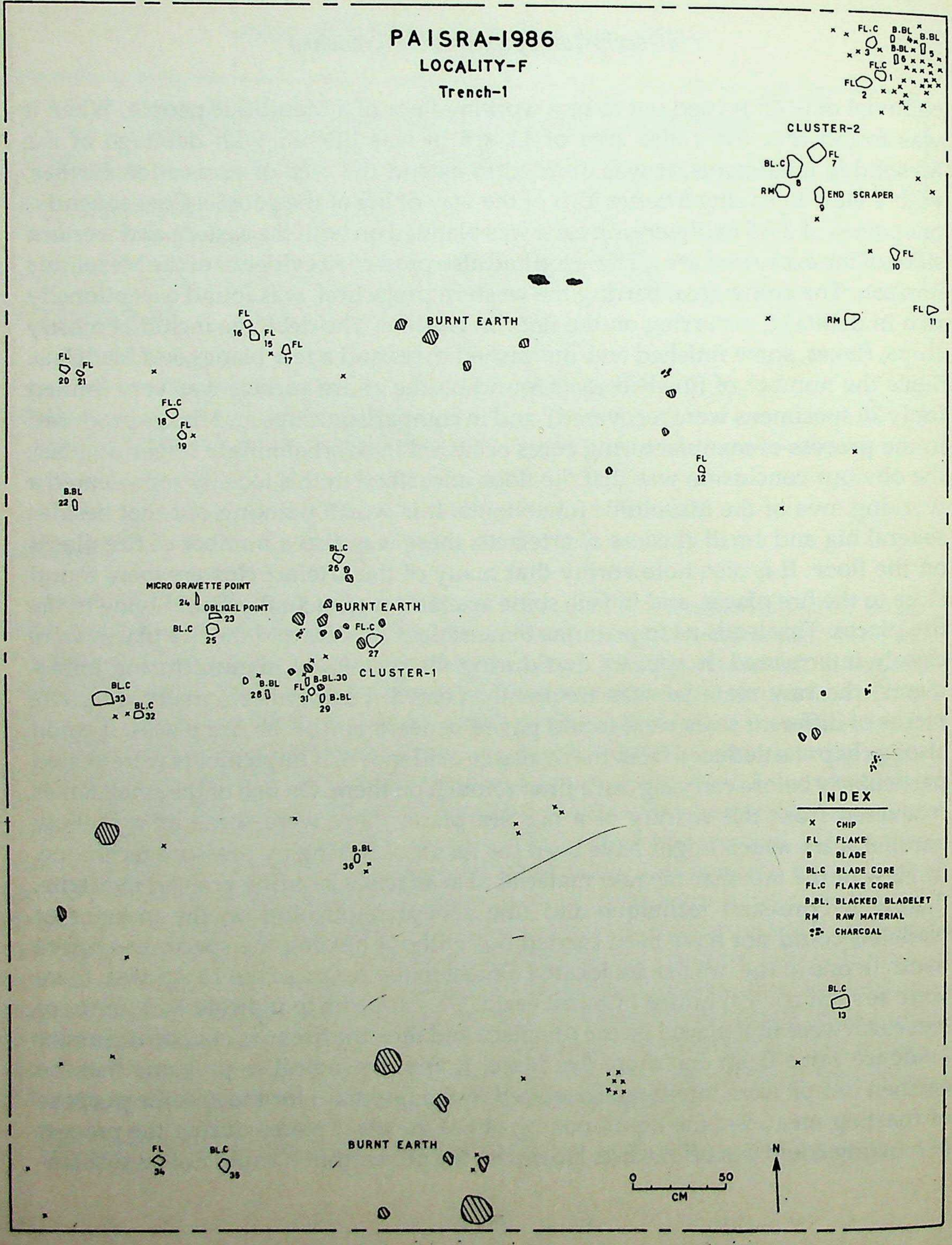
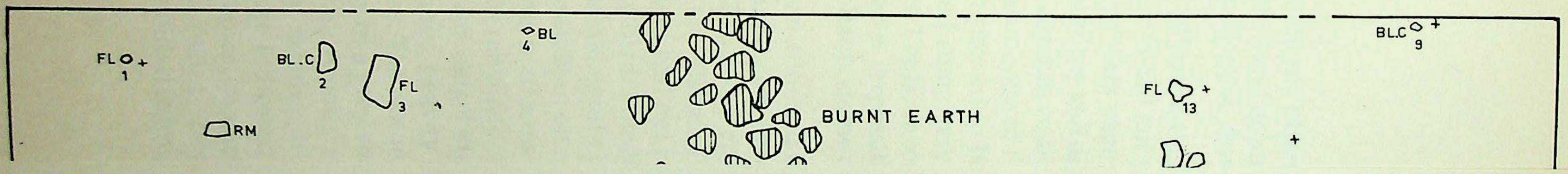

PAISRA-1986
LOCALITY-F
Trench-1
FL.C 3
B.BL 4
B.BL 5
B.BL 6
FL.C 1
FL 2
CLUSTER-2
FL 7
BL.C 8
RM
END SCRAPER 9
FL 10
FL 11
RM
BURNT EARTH
FL 16
FL 15
FL 17
FL 20
FL 21
FL.C 18
FL 19
FL 12
B.BL 22
BL.C 26
MICRO GRAVETTE POINT 24
OBLIQEL POINT 23
BL.C 25
BURNT EARTH
FL.C 27
CLUSTER-1
D
B.BL 28
FL 31
B.BL.30
B.BL 29
BL.C 33
BL.C 32
B.BL 36
BL.C 13
INDEX
X CHIP
FL FLAKE
B BLADE
BL.C BLADE CORE
FL.C FLAKE CORE
B.BL. BLACKED BLADELET
RM RAW MATERIAL
CHARCOAL
BURNT EARTH
FL 34
BL.C 35
0
50
CM
N

Fig. 17. Plan of Mesolithic floor in Trench 1 of Locality F.


FL 1
BL.C 2
FL 3
RM
BL 4
BURNT EARTH
FL 13
BL.C 9

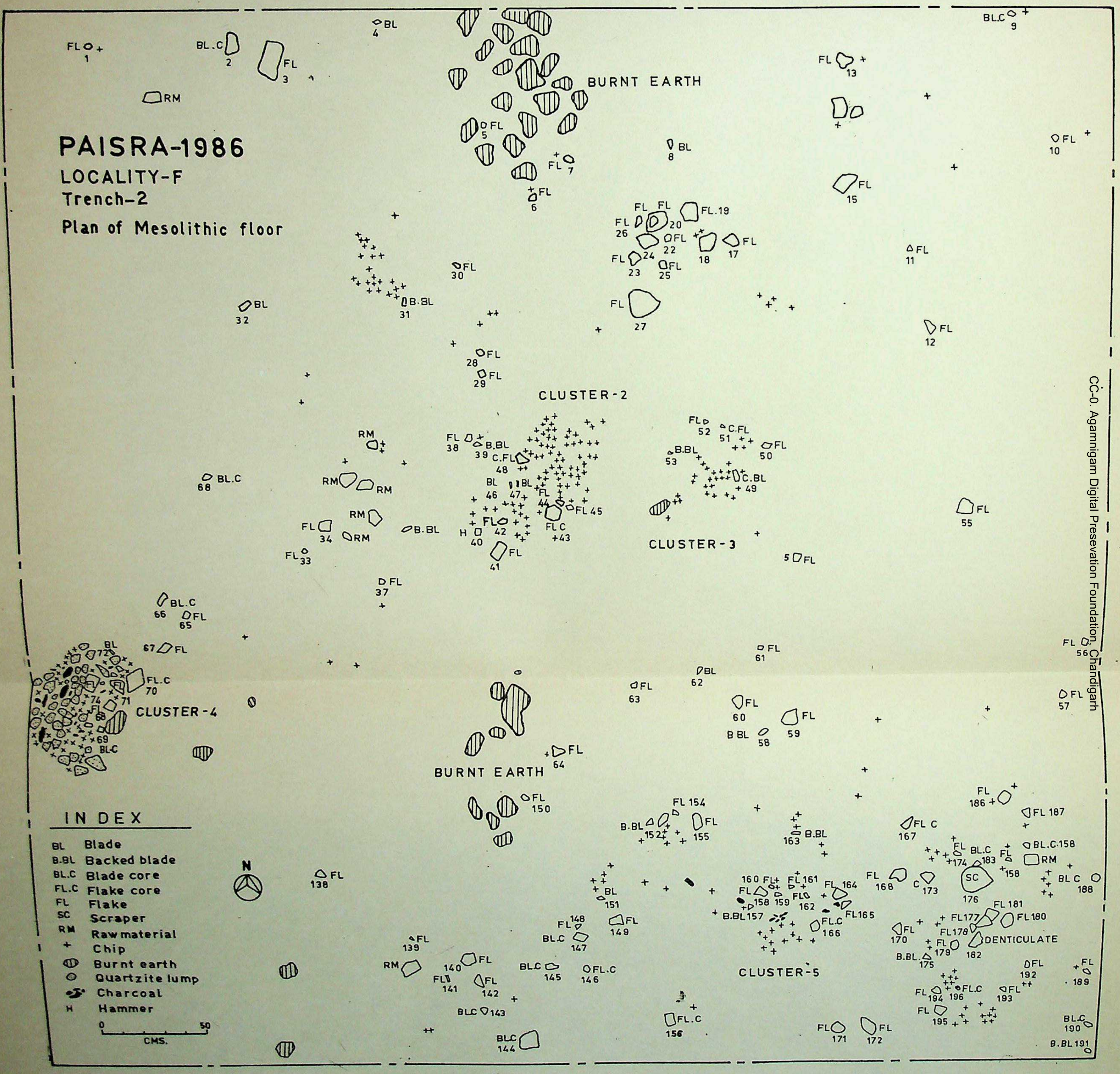

PAISRA-1986
LOCALITY-F
Trench-2
Plan of Mesolithic floor
BURNT EARTH
CLUSTER-2
CLUSTER-3
CLUSTER-4
CLUSTER-5
BURNT EARTH
N
IN DEX
BL Blade
B.BL Backed blade
BL.C Blade core
FL.C Flake core
FL Flake
SC Scraper
RM Raw material
+ Chip
Burnt earth
Quartzite lump
Charcoal
H Hammer
0 50
CMS.
DENTICULATE

Fig. 18. Plan of Mesolithic floor in Trench 2 of Locality F.

tiated by any observable evidence in the form of burnt bones, etc. A few pieces of stones in and around even such fire places as the above one indicated that, besides roasting meat, they were also used for heating stones.

It is interesting to note that the 5 × 5 m trench taken on the western side (trench 3) did not yield even a single stone artefact, though several big and small dark patches were noticed on the floor (Fig. 19). All except one were limited to the surface only and did not reveal any thing when subjected to cross-sectioning. These dark patches could have been the result of exposure to fire for short durations. However, one of the large patches of 108 × 85 cm dimension and about 20 cm in depth proved to be a refuse pit. Besides a substantial amount of charcoal, it also yielded some very decomposed animal bones alongwith two tiny charred bone pieces. The bone remains were so fragmentary and fragile as to make identification of species impossible. The evidence seems to suggest that it was a refuse pit where inhabitants threw all their waste including remains of animal left-over food.

As mentioned earlier, the artefacts were found mostly in clusters on the floor, although some sporadic stone pieces were also recovered away from the clusters (Fig. 20). Every cluster contained a very large number of chips apart from a few cores and flakes. The available debitage indicates that the Mesolithic population of Paisra had not perfected the blade detaching technique. There was hardly any core or blade/bladelet which revealed careful preparation of ridge on the nucleus before taking off blades/bladelets. In fact most of the cores exhibited only careful preparation of one or more striking platforms. At times strokes were delivered on striking platforms with a view to taking-off blades/bladelets even if the core surface remained nearly plain without any evidence of natural or artificial ridge. Even for detaching blades and bladelets, it appears that the Mesolithic people depended heavily on heating the raw material which must have facilitated the process. The raw material of all the artefacts was invariably fine grained quartzite, mostly of a grey shade. Even the four available microliths were made of the same material. Among the microliths, the fine retouch carried out at a high angle was mostly limited to the two ends of the specimens. The finished tools and the debitage indicated that it was an early Mesolithic complex, unassociated either with typical geometric forms of microliths or any type of pottery. One radio-carbon date of 7420 ± 110 years B.P. of a charcoal sample (B.S.I.P. No. BS - 675) provided by the Birbal Sahni Institute of Palaeobotany, Lucknow, supports this conclusion.

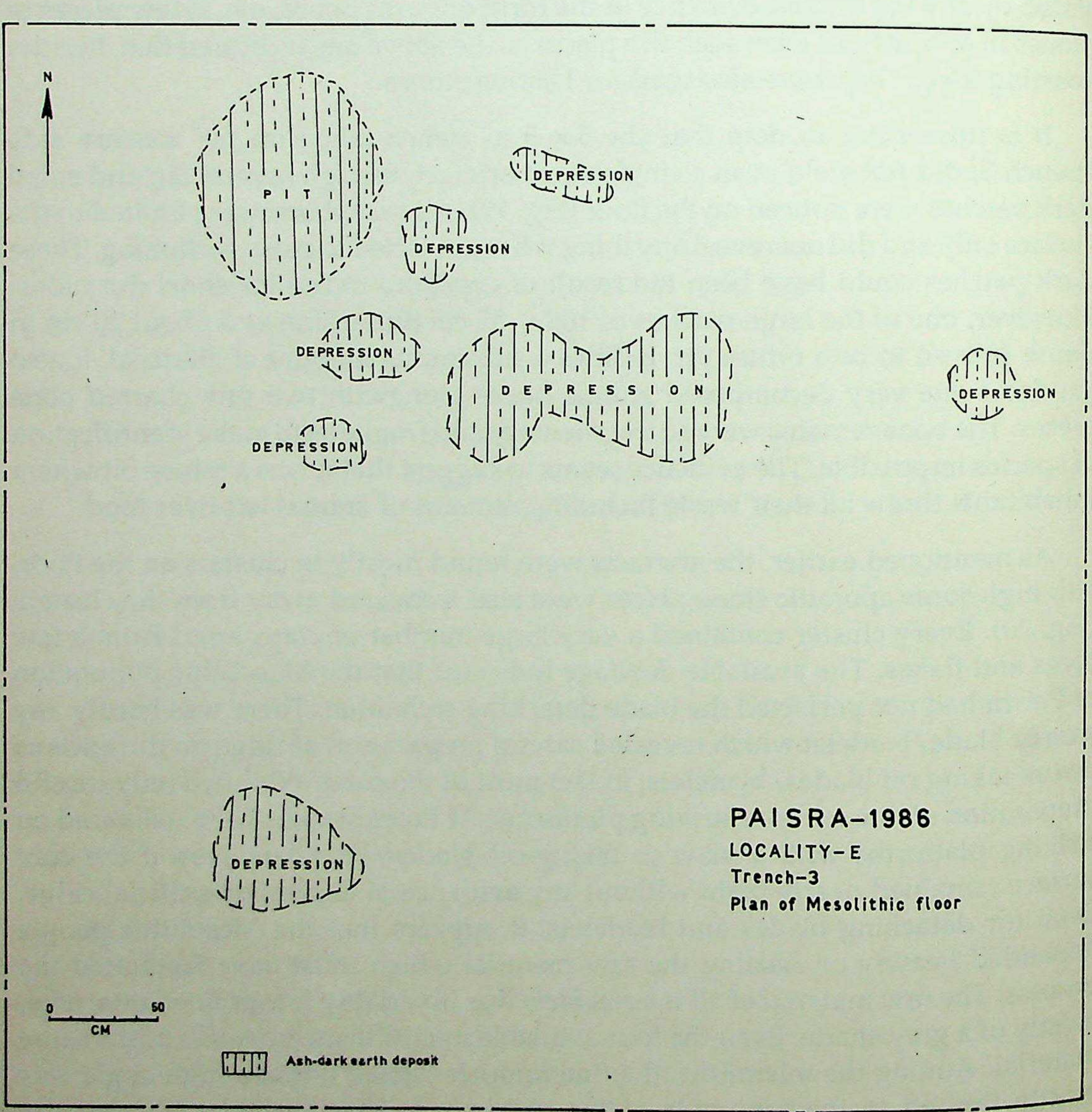

N
PIT
DEPRESSION
DEPRESSION
DEPRESSION
DEPRESSION
DEPRESSION
DEPRESSION
DEPRESSION
DEPRESSION
PAISRA–1986
LOCALITY–E
Trench–3
Plan of Mesolithic floor
0
50
CM
Ash-dark earth deposit

Fig. 19. Plan of Mesolithic floor in Trench 3 of Locality F.

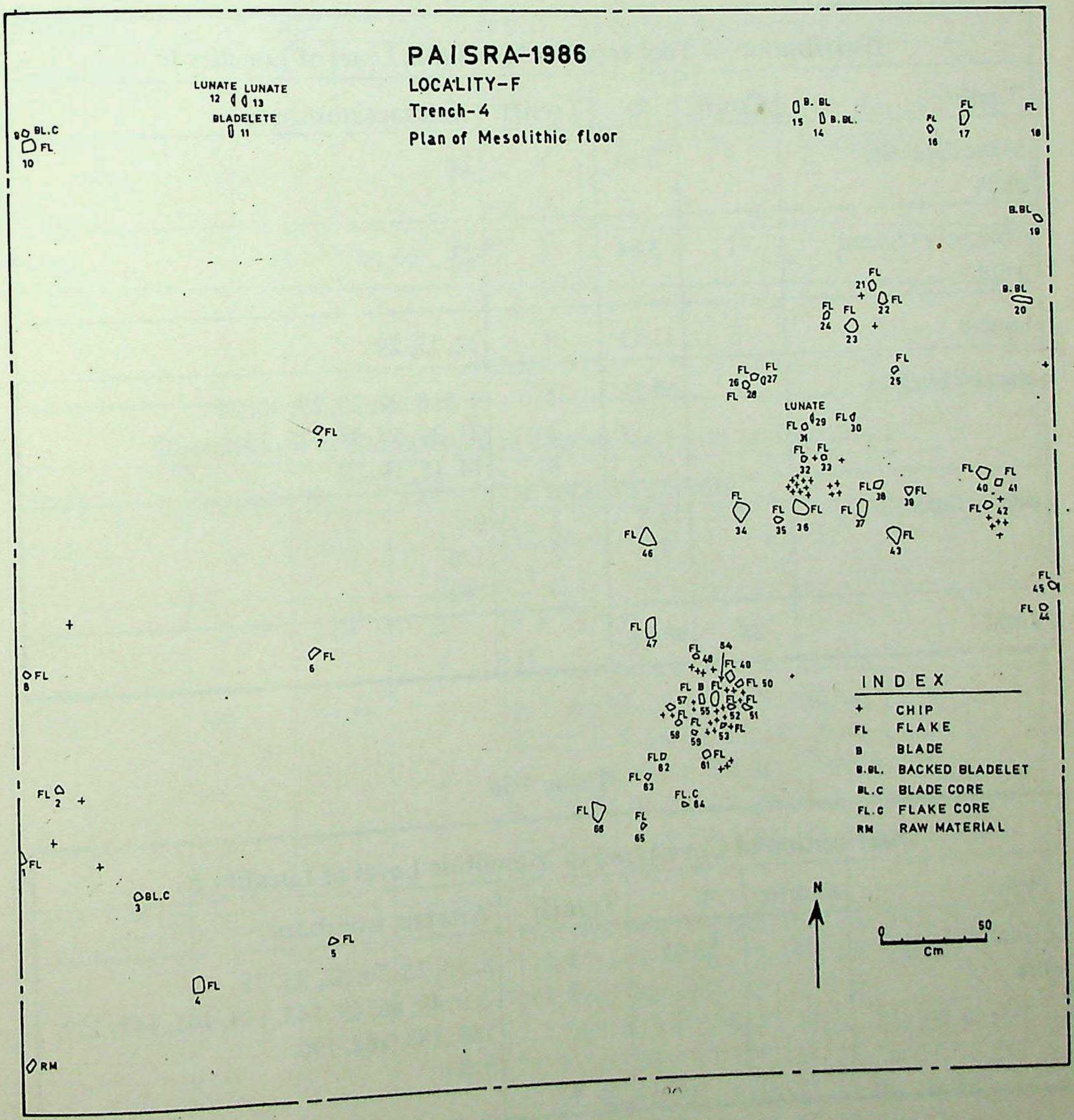

PAISRA-1986
LOCALITY-F
Trench-4
Plan of Mesolithic floor
LUNATE
BLADELETE
BL.C
FL
B.BL
RM
N
0
50
Cm
INDEX
+ CHIP
FL FLAKE
B BLADE
B.BL. BACKED BLADELET
BL.C BLADE CORE
FL.C FLAKE CORE
RM RAW MATERIAL

Fig. 20. Plan of Mesolithic floor in Trench 4 of Locality F.

Table 29

Distribution of Tool-types in Mesolithic Level of Locality F

Type	Count	%	Trench	Artefact numbers
Micro-Gravette point	1	3.84	1	24
Obliquely blunted point	1	3.84	1	23
Lunate	3	11.53	4	12, 13, 29
Backed bladelet	18	69.23	1 2 4	4, 5, 6, 22, 28, 29, 30, 36 31, 39, 53, 58, 175, 191 14, 15, 19, 20
Side scraper	3	11.5 3.8	1 2 2	9 176 182
Total	**26**	**99.97**		

Table 30

Distribution of Core-types in Mesolithic Level of Locality F

Type	Count	%	Trench	Artefact numbers
Blade/bladelet core	43	53.48	1 2 4	8, 13, 25, 26, 32, 33, 35 2, 9, 49, 66, 69, 143, 144, 145, 147, 157, 163, 183, 188, 190 3, 9

Distribution of Core-types in Mesolithic Level of Locality F

Type	Count	%	Trench	Artefact numbers
Flake core	20	46.51	1	1, 3, 18, 27
			2	43, 48, 51, 70, 146, 156, 166, 167, 173, 184, 185, 186, 187, 190, 196
				64
			4	
Total	**43**	**99.99**		

Table 31

Distribution of Blank-types in Mesolithic Level on Locality F

Type	Count	%	Trench	Artefact numbers
Bladelet	5	3.33	2	32, 46, 47, 62
			4	11
Blade	5	3.33	2	4, 8, 72, 151
			4	55
Flake	140	93.33	1	2, 7, 10, 11, 12, 15, 16, 17, 19, 20, 21, 34,
				1, 3, 5, 6, 7, 10, 11, 12, 13, 15, 17, 19, 20, 22,
			2	23, 25, 26, 27, 28, 29, 30, 33, 34, 37, 38, 41, 44, 45, 52, 54, 55, 56, 57, 59, 60, 61, 63, 64, 65, 67, 68, 71, 74, 138, 139, 140, 141, 142, 147,148, 149, 150, 154, 155,
				158, 159, 160, 161, 162, 164, 165, 168, 169, 170, 171, 172, 174, 177, 178, 179, 180, 181, 182, 189, 192, 193, 194
			4	1, 2, 4, 5, 6, 7, 10, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 57, 58, 59, 61, 62, 63, 65, 66

Distribution of Blank-types in Mesolithic Level on Locality F				
Type	Count	%	Trench	Artefact numbers
Total	**150**	**99.93**		

The total area of 19 × 5 m of the slopes of the locality F was exposed for the Acheulian level (Fig. 21). As in other localities artefacts occurred on the upper crust of the layer of tiny haematite pellets, which was as much as 30 to 35 cm thick at certain places, though the deposit was negligible where the level of bed-rock was considerably raised. As was the case with the trenches of locality E, the number of artefacts was rather limited even in this cutting of the locality F. It is interesting to note that they generally occur in the areas surrounded by rock exposures and where the deposit of haematite pellets is rather thick. They were rarely found resting on the exposed rocks which are abundant in this trench. It may perhaps be deduced that Acheulian groups occupied such central plains of the valley, as were surrounded by raised rocks which presumably provided some sort of security to them. The number of finished tools was indeed very small in this cutting and the artefacts usually consisted of flakes, cores and chips. There were also a few lumps of raw material. The Acheulian character of the assemblage is mainly demonstrated by a single cleaver which is massive in size.

Table 32

Distribution of Tool-types of Acheulian Floor of Locality F			
Type	**Count**	**%**	**Artefact numbers**
Cleaver	1	16.66	63
Side scraper	5	83.33	6, 40, 51, 69, 78
Total	**6**	**99.99**	

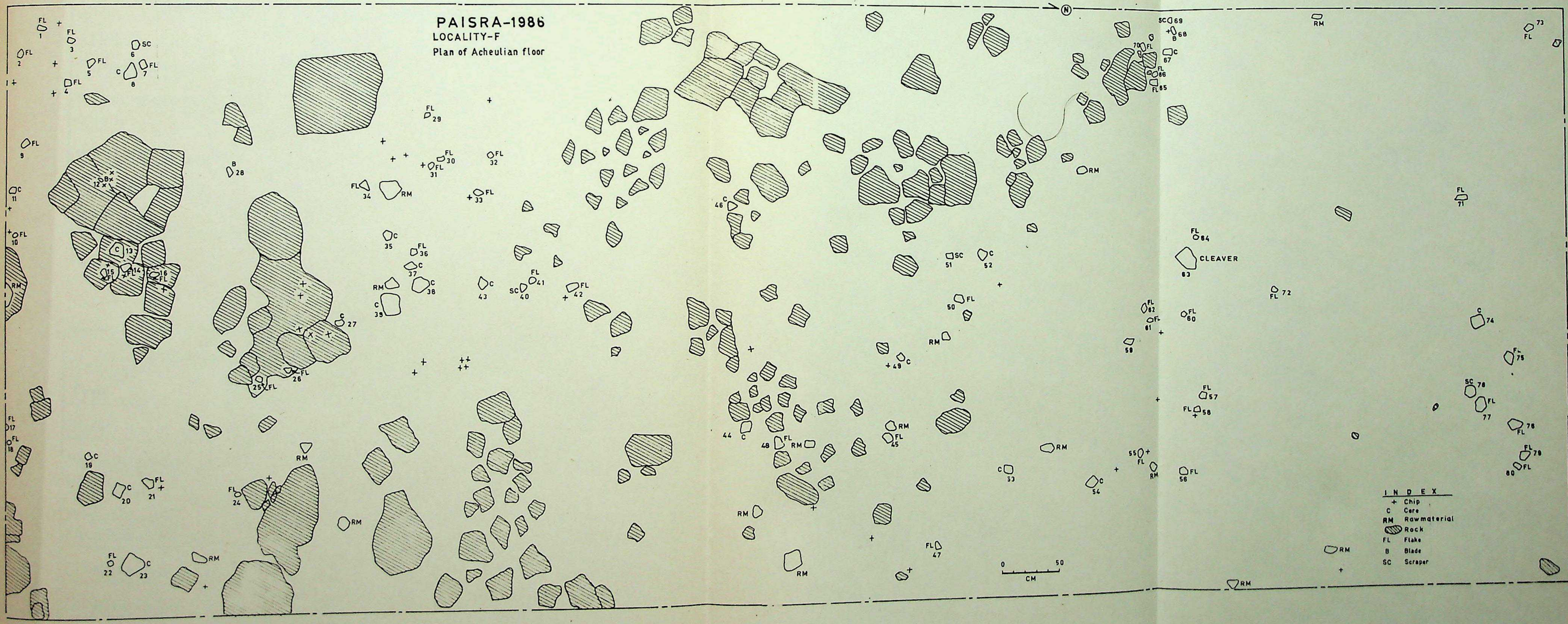

PAISRA-1986
LOCALITY-F
Plan of Acheulian floor
N
FL 1
FL 2
FL 3
FL 4
FL 5
SC 6
FL 7
C 8
FL 9
FL 10
C 11
B 12
C 13
FL 14
FL 15
FL 16
FL 17
FL 18
C 19
C 20
FL 21
FL 22
C 23
FL 24
FL 25
FL 26
C 27
B 28
FL 29
FL 30
FL 31
FL 32
FL 33
FL 34
C 35
FL 36
C 37
C 38
C 39
SC 40
FL 41
FL 42
C 43
C 44
FL 45
C 46
FL 47
48
C 49
FL 50
SC 51
C 52
C 53
C 54
FL 55
FL 56
FL 57
FL 58
59
FL 60
FL 61
FL 62
CLEAVER 63
FL 64
FL 65
FL 66
C 67
B 68
SC 69
FL 70
FL 71
FL 72
FL 73
C 74
FL 75
SC 76
FL 77
FL 78
FL 79
FL 80
RM
0
50
CM
INDEX
+ Chip
C Core
RM Rawmaterial
▨ Rock
FL Flake
B Blade
SC Scraper

Fig. 21. Plan of Acheulian floor of Locality F.

Table 33

Distribution of Core-types of Acheulian Floor of Locality F			
Type	Count	%	Artefact numbers
Partially prepared core	5	25.00	11, 37, 39, 53, 74
Prepared non-Levallois core	7	35.00	13, 20, 38, 43, 44, 46, 54
Levallois flake core	5	25.00	8, 19, 27, 35, 67
Irregular core	3	15.00	23, 49, 52
Total	**20**	**100.0**	

Table 34

Distribution of Blank-types of Acheulian Floor of Locality F			
Type	Count	%	Artefact numbers
Blade	3	5.55	12, 28, 68
Partially prepared flake	12	12.22	2, 4, 21, 29, 30, 36, 42, 55, 57, 70, 75, 79
Prepared non-Levallois flake	23	42.66	1, 5, 7, 14, 17, 24, 25, 26, 31, 32, 34, 41, 47, 48, 56, 58, 59, 62, 65, 66, 71, 76, 77
Levallois flake	10	18.55	3, 10, 15, 18, 22, 33, 60, 61, 64, 73
Dressing flake	6	11.11	9, 16, 45, 50, 72, 80
Total	**54**	**99.99**	

Locality G

About three hundred metres north of the locality E and about four hundred metres west of the Paisra village there is a vast area exposed by repeated denudations. In fact the entire area has undergone severe erosion and the overlying earth cover is retained only sporadically in patches. This area was named as locality G. In the 1984 season it was noticed that an area of about 80 × 50 m was raised to a height of nearly 1 to 1.5 m above its surroundings. Devoid of the upper cover of earth the surface preserved a large number of straight and curved stone alignments on the thick deposit of haematite pellets. The evidence appeared very significant, and necessitated thorough investigation to confirm or otherwise whether they could be associated with the Acheulian inhabitants.

However, the area could not be examined in detail before the 1986 season, when parts of it were cleaned by removing the very compact upper crust of the haematite pellets. A few artefacts of the Acheulian tradition including handaxes and cleavers were exposed in the process by the side of some of these alignments (Figs. 22 & 23). The entire evidence led us to believe that the stone alignments were perhaps not natural and represented human endeavour and the possibility of their association with the Acheulians could not be ruled out. However, regular excavation in an undisturbed area was considered imperative to confirm these tentative conclusions. Fortunately, a small area was found in the vicinity which had escaped erosion and the cover of earth was partly retained there. A trench measuring 8.3. × 5 m was planned in this area with a view to ascertaining whether such stone alignments as found on the neighbouring surface also existed in the undisturbed portions of this upland.

Since the trench was laid in an area where the upper layer of earth was partly eroded, the deposit was not uniform in all parts of the trench. It was as much as about 4 m in the northern uneroded part, only about 1.10 m in the middle, and about 1.75 m in the southern end of the trench. The general stratigraphy, best preserved in the section facing south, is more or less the same as observed in the localities E and F. The uppermost deposit was formed by reddish sandy silt of colluvial origin and beneath it were found two layers of thick compact weathered soil, measuring about 2.75 m. The upper part of this lower deposit was yellowish in colour with occasional haematite pellets, while the lower part was also reddish in patches with thicker concentration of haematite pellets, occurring generally in clusters. The lowermost layer was composed of very compact haematite pellets, which were thicker (as much as 55 to 60 cm) at places where the underlying shales

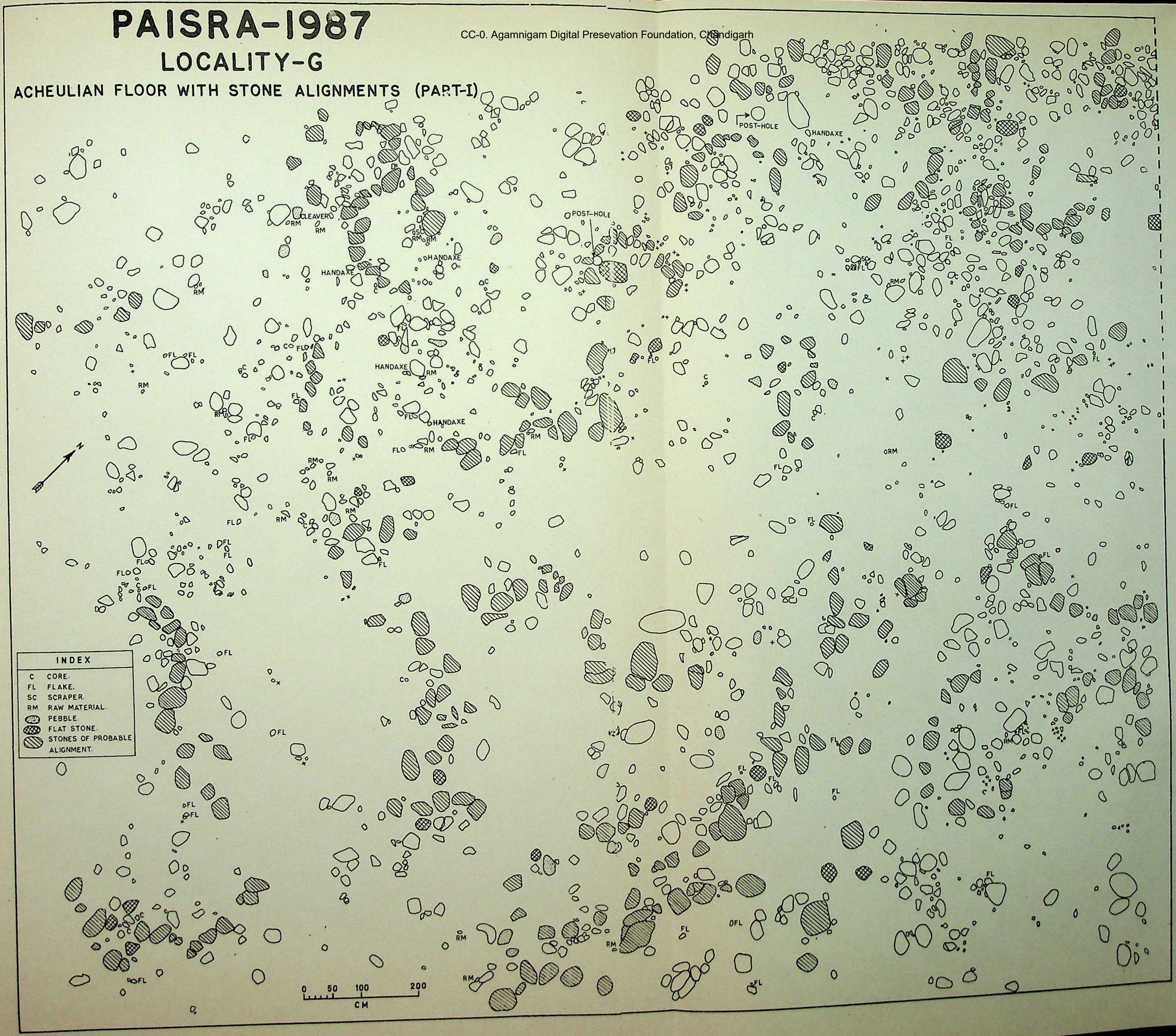

PAISRA-1987
LOCALITY-G
ACHEULIAN FLOOR WITH STONE ALIGNMENTS (PART-I)
INDEX
C CORE.
FL FLAKE.
SC SCRAPER.
RM RAW MATERIAL.
PEBBLE.
FLAT STONE.
STONES OF PROBABLE ALIGNMENT.
N
0 50 100 200
CM
POST-HOLE
POST-HOLE
HANDAXE
CLEAVER
FL
RM
SC
C

Fig. 22. Acheulian alignments (Part I) of Locality G.

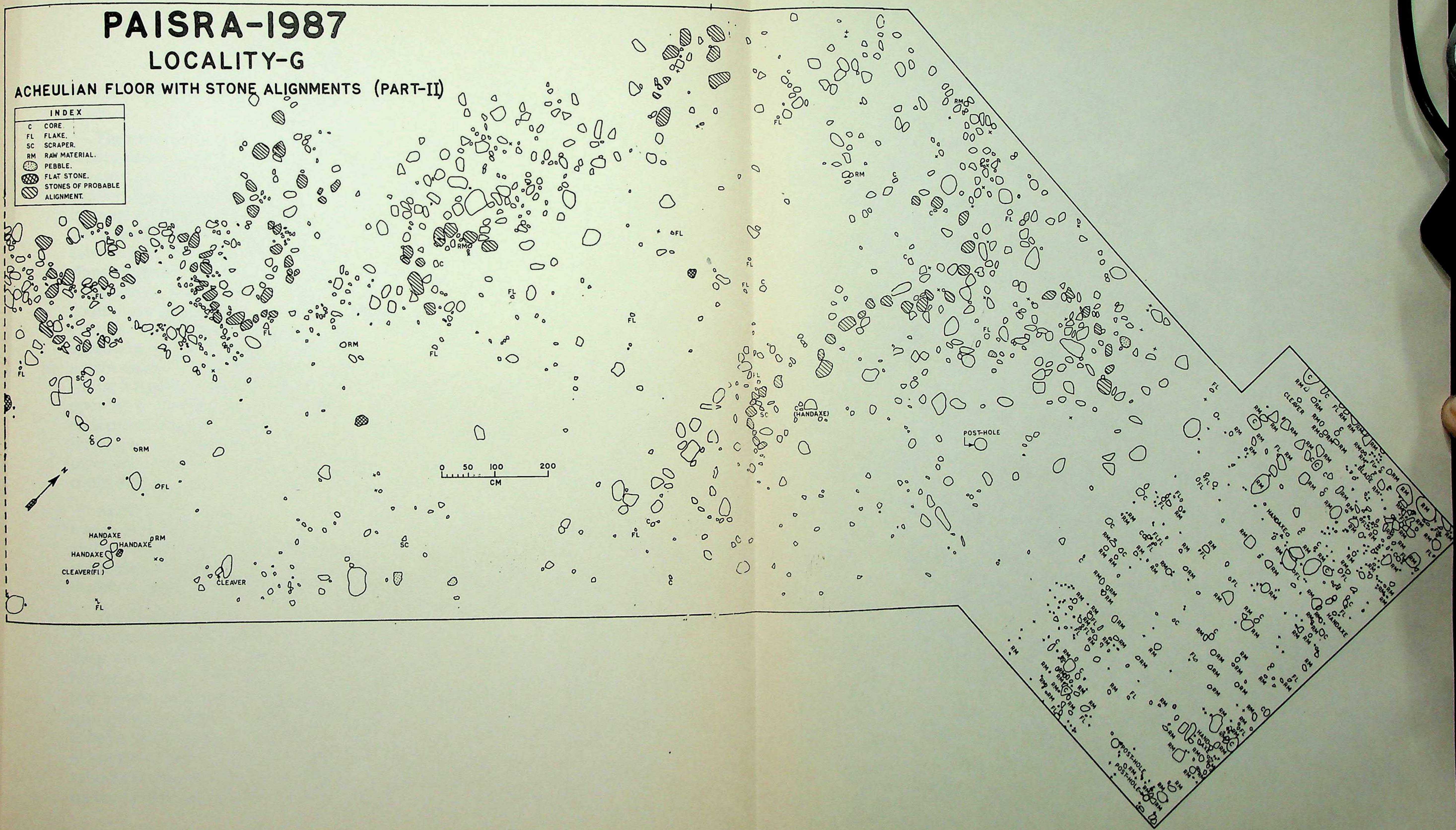

PAISRA-1987
LOCALITY-G
ACHEULIAN FLOOR WITH STONE ALIGNMENTS (PART-II)
INDEX
C CORE.
FL FLAKE.
SC SCRAPER.
RM RAW MATERIAL.
PEBBLE.
FLAT STONE.
STONES OF PROBABLE ALIGNMENT.
N
0 50 100 200
CM
HANDAXE
HANDAXE
HANDAXE
CLEAVER(FL)
CLEAVER
HANDAXE
POST-HOLE
CLEAVER
BLADE
POST-HOLE
POST-HOLE
RM
FL
SC
C

Fig. 23. Acheulian alignments (Part II) of Locality G.

formed deep depressions. As usual, artefacts were present on the crust of this basal layer.

The evidence exposed by the cutting under reference seems to substantiate our observations regarding the stone alignments located in the neighbouring unexcavated surface. The habitational floor of the trench had also preserved some similar alignments, one of which was fairly large (about 1.75 m in length from east to west) and formed a sort of semi-circle. Almost in the middle of this alignment were placed three stones close to each other in a straight line in north-south orientation. The semi-circular formation of quartzite blocks of medium dimensions probably represented some type of structure, while the three other stones were placed inside this presumed structure for some household purposes. They could have been used as anvils for chopping meat or cracking wild seeds. However, in the absence of any supporting evidence these are no better than logical speculations. Similarly, there is a small 'V' shaped alignment of stones in the northeastern corner of the trench. Though partly covered by the section facing south, it had two fairly well preserved sides of the 'V' with the third side being the opening of the supposed structure. It is indeed very significant to note that several rock pieces have been placed almost in the middle of the opening of this triangular formation and there is a noticeable concentration of artefacts including flakes, cores and chips in the vicinity. Besides the above, some smaller stone alignments could also be observed in different parts of the floor of this trench (Fig. 24)

Another significant evidence of habitation near the southeastern end of this trench is in the form of two post-holes, one of them being larger than the other, and separated from each other by about 1.25 m. It may be recalled that similar evidence for post-holes presumably meant for constructing small temporary thatched super-structures was also unearthed in the locality D.

The habitational floor recovered in this trench was very undulating. It was characterized by a depression measuring a little less than 4 m in length and 65 cm deep almost in the centre of the trench. The level of the surrounding area was higher on all the four sides. It is very interesting to observe that there were very few stones including artefacts inside the depression, while the surrouding raised ground was littered with a very large number of artefacts, quartzite lumps suitable to be used as raw material, and several boulders and smaller rock pieces. The entire evidence appears to suggest that the Acheulian inhabitants preferred to occupy raised grounds avoiding depressions. A large number of stone alignments located on the neighbouring exposed surface also seems to confirm this deduction.

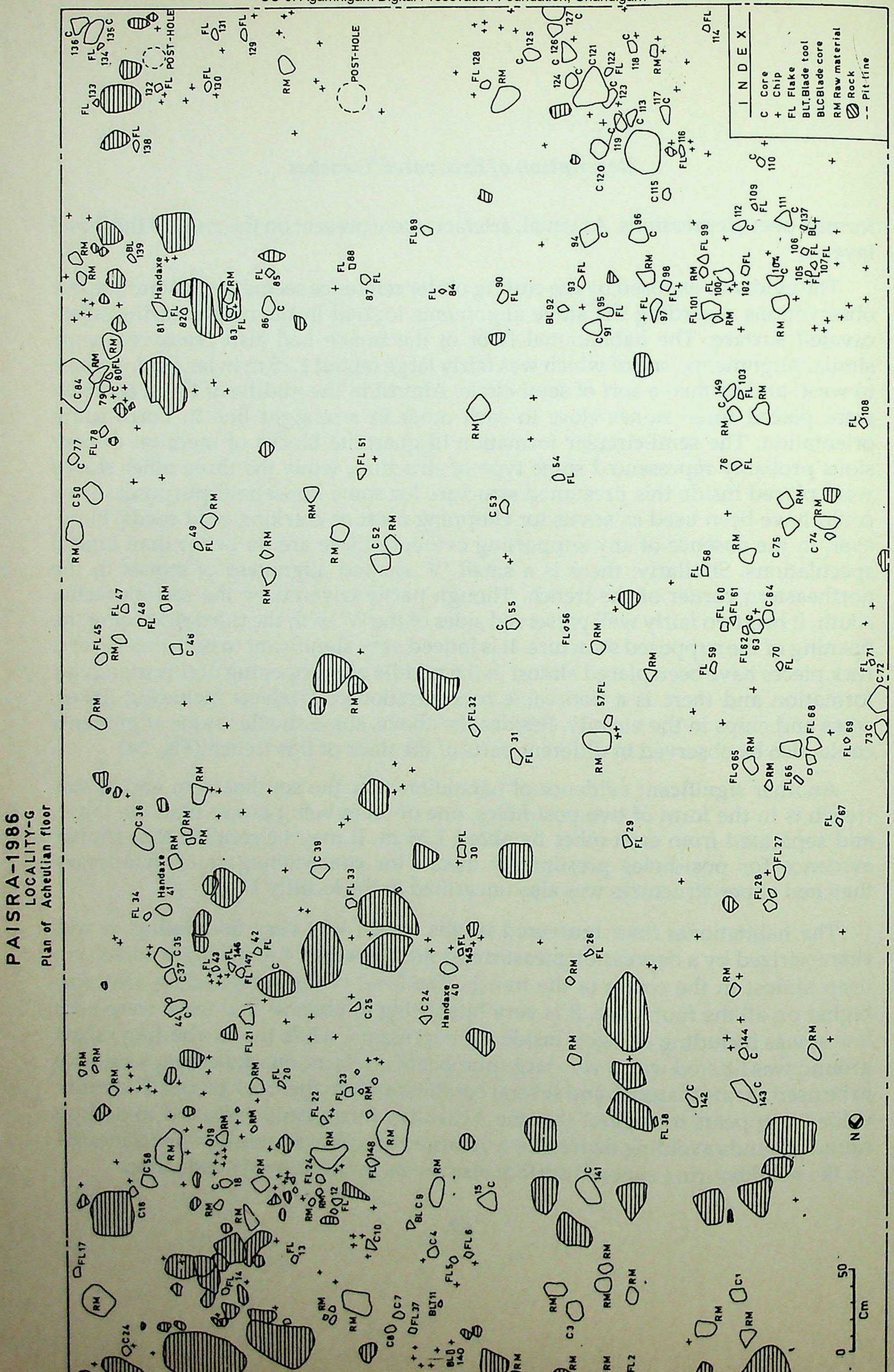

PAISRA-1986
LOCALITY-G
Plan of Acheulian floor
INDEX
C Core
+ Chip
FL Flake
BLT. Blade tool
BLC Blade core
RM Raw material
Rock
-- Pit line
POST-HOLE
POST-HOLE
Handaxe
N
0
50
Cm

Fig. 24. Plan of Acheulian floor in Trench of Locality G.

Table 35

Distribution of Tool-type in Locality G			
Type	Count	%	Artefact numbers
Handaxe	3	100.00	40, 41, 81
Total	3		

Table 36

Distribution of Core-types in Locality G			
Type	Count	%	Artefact numbers
Partially prepared core	10	17.55	3, 4, 18, 50, 86, 113, 115, 119, 143, 144
Prepared non-Levallois core	20	35.08	1, 8, 10, 37, 39, 46, 53, 55, 64, 72, 73, 74, 75, 96, 117, 118, 121, 141, 142, 149
Levallois core	14	24.56	7, 16, 25, 35, 36, 63, 77, 91, 104, 110, 124, 125, 126, 127
Blade core	1	1.75	9
Irregular core	12	21.06	15, 24, 44, 52, 79, 94, 111, 112, 120, 123, 135, 136
Total	57	99.99	

Table 37

Distribution of Blank-types in Locality G

Type	Count	%	Artefact numbers
Blade	7	7.86	11, 30, 38, 92, 137, 139, 140
Partially prepared flake	23	25.73	5, 17, 23, 29, 31, 42, 43, 47, 48, 49, 51, 56, 65, 87, 88, 89, 93, 97, 101, 102, 107, 116, 132
Prepared non Levallois flake	34	38.20	2, 12, 13, 14, 21, 22, 27, 32, 33, 45, 54, 57, 58, 59, 60, 69, 70, 76, 80, 82, 83, 90, 95, 103, 105, 106, 114, 122, 130, 131, 133, 134, 146, 148
Levallois flake	13	14.60	19, 20, 34, 61, 62, 68, 71, 78, 98, 128, 129, 138, 145
Dressing flake	12	13.48	6, 26, 28, 66, 67, 84, 85, 99, 100, 108, 109, 147
Total	**89**	**99.87**	

The artefact scatters unearthed in the cutting under discussion were almost similar to those found in the localities C & D. Unlike the trenches of the localities E & F, where the number of artefacts was generally limited, this trench yielded a considerably large artefact assemblage. They were found mostly in clusters as was the case with the localities C & D. The artefacts include a very large number of chips, several flakes and cores, and only a few finished tools. The last category also included three handaxes, but there was no cleaver. Some of the flakes exhibited marks of retouch and use-wear. If the pattern of distribution of artefacts and their screening are taken into consideration the most logical conclusion would be that the locality was indeed the work-shop area of Acheulian inhabitants. The large number of stone alignments traced on the neighbouring exposed surface and the evidence for similar alignments as well as post-holes in the excavated trench would suggest that the entire locality was actually inhabited by the Acheulian settlers of Paisra.

5

Paleo-Environment

It may be admitted at the very outset that the evidence for reconstructing paleo-environment at Paisra is indeed meagre. As referred to earlier, the site did not preserve faunal remains except a few unidentifiable fragmentary bones associated with the Mesolithic floors. It is very surprising that in spite of slightly alkaline nature of all the deposits, as indicated by their above 7.5 pH values, and in spite of the presence of a small percentage of calcium in all the strata, we did not find any substantial faunal remains at Paisra. It appears that Paisra experienced long dry seasons throughout its depositional history, and it was during these spells that bones, if they were at all present, were exposed to high temperature and high velocity winds, which brought about their disintegration. The same may be true with reference to the presumed macro-botanical remains. Obviously, pollen grains would not have survived in alkaline deposits. Therefore, the nature of sediments appears to be the only evidence for understanding the paleo-environment at Paisra.

Our excavations reveal that the Acheulian population of Paisra settled, most often, on the surface of well hardened 10 to 35 cm thick deposit of haematite pellets, but also at times on the bare surface of shales. These pellets must have formed as a result of the chemical weathering of some earlier iron-rich sediments. While the smaller particles of sand, silt and clay of this supposed deposit were washed away by rain water during an erosional period, the haematite pellets being heavier in weight could not be carried away and settled on the shale surface. The percolating calcium carbonate turned them into a hardened and compact deposit. When the

Acheulian man came to the valley he must have found it generally devoid of finer sediments. There is nothing in the deposit of haematite pellets including its surface which may indicate the environmental conditions faced by the first settlers of Paisra. However, it can be reasonably presumed that the climatic conditions would not have been unfavourable for human settlement. There would have been enough rainfall to sustain forests as well as animals, and sufficient amount of drinking water must have been available for human consumption.

Thus, all the sediments lying over the compact stratum of haematite pellets, and ranging from less than a metre to as much as above four metres at different localities, accumulated after the departure of the Acheulian settlers from the site, as their cultural remains lie invariably on the surface of the haematite pellets and have never been found embedded in the overlying sediments. The time interval between the two events cannot be determined in the absence of absolute dates. During the course of our excavations, we collected soil samples from all the strata of localities E, F and G for laboratory tests, since it was noticed that the soil profiles of these three localities were more or less complete. It was also observed that the sequence as well as the nature of deposits at all the three places were exactly similar, though the thickness of various strata differed from locality to locality.

In view of the above observations and the limited facilities available to us for laboratory tests, one soil sample from each layer of the locality E, and one sample from the Mesolithic floor of the locality F were subjected to preliminary tests by hydrometer method. The results of these investigations are tabulated below.

Table 38

Results of Soil-analysis by Hydrometer method

S. No.	Locality	Layer	Depth	pH	Moisture %	Sand %	Silt %	Clay %	Sequioxide ($Fe_2O_3 + Al_2O_3$) %	Organic Matter %	CaO %
1	F	1	0.25 m	7.8	1.7	69	16	8	9.35	1.45	0.52

Results of Soil-analysis by Hydrometer method

S. No.	Locality	Layer	Depth	pH	Moisture %	Sand %	Silt %	Clay %	Sequioxide ($Fe_2O_3 + Al_2O_3$) %	Organic Matter %	CaO %
2	F	1 (Meso-lithic floor)	0.72 m	8.5	1.77	41	18	11	16.60	1.45	0.25
3	E	2	0.85 m	8.3	3.20	51	16	23	13.95	1.20	0.17
4	E	3A	1.47 m	8.4	2.04	66	25	6	4.77	0.77	0.26
5	E	3A	1.98 m	8.3	1.42	75	14	9	6.42	0.56	0.12
6	E	3B	2.34 m	8.6	0.46	68	15	13	10.74	1.13	0.61
7	E	3B	2.70 m	8.6	3.70	45	15	20	9.45	3.13	1.12

The nature of the deposit lying just above the layer of haematite pellets (layer-3) seems to indicate that Paisra witnessed a long dry climatic phase after the desertion of the site by the Acheulian settlers. The composition and structure of the deposit are indicative of *in situ* weathering of huge mass of rock-debris of sandstones, quartzites and shales, which must have filled the Paisra valley all along its length and breadth during the climatic phase of insufficient rains. During this supposed arid phase, rock-debris must have been produced as a result of intense physical weathering of rocks which were now exposed due to the absence of vegetational cover. The ensuing wet phase stabilized this accumulation, and the process of its chemical weathering started as a result of increased precipitation.

The texture of the deposit appears to range from sandy loam to silty clay loam. Although it is very compact throughout its thickness, the lowermost part, designated as layer 3-B is more hardened, and even the most efficient pickman finds it extremely difficult to dig. Its considerable plasticity, when wet, is another noteworthy feature. However, it develops deep fissures, when exposed to sunlight for a couple of days or so. There is a fair sprinkling of tiny haematite pellets all through the deposit, though their concentration is in appreciable quantity only in the upper part, marked as 3-A. It needs to be pointed out, however, that unlike the haematite pellets of the basal deposit overlying the bed rock, the tiny pellets of the deposit under discussion are rather fragile.

The wet conditions, which presumably followed the arid phase, must have given rise to a moderately thick forest cover in the entire region. However, it appears logical to presume that even during this humid phase the area received increased precipitation only in the rainy season which would have been more prolonged than that of present day, and the rest of the year remained more or less dry. The major chemical activity in the deposit must have been limited to only rainy seasons. However, during the ensuing dry seasons oxidation of minerals present in the deposit must have taken place. Thus, the sediments were subjected to an alternating cycle of hydration and oxidation. This is amply demonstrated by patches of yellow and red colours in the deposit. Since yellow colour is produced by highly hydrated oxides, it is only logical to suppose that the rainfall was appreciably higher than today. The oxidation of iron in soil minerals resulted in red colours. It is worthwhile to mention here that haematite, an anhydrous ferric oxide, is also formed in certain deposits in an alternating climate of wet and dry seasons, as is the case with *rotlehms* (Cornwall : 1961 : 101-102). The climate also seems to have been suitable for the leaching of clay particles, sesquioxides, organic matter and calcium, as is evident from the table.

The overlying deposit of the layer 2 is not much different from the layer 3, discussed above. It appears that the cycle of dry and wet phases was repeated during the formation of this deposit also. That means the rock-debris was produced once again, and it too underwent the process of chemical weathering during a subsequent wet phase. In view of the fairly high percentage of clay particles and sesquioxides in the only sample analysed from the upper part of this layer, it could probably be deduced that leaching was negligible in this formation. Thus, considering the lesser thickness of this deposit than that of the layer 3 and some indication of near absence of leaching in it, can it not be argued that both dry and wet phases responsible for the formation of this part of the profile were of lesser duration?

The uppermost layer measuring variously between 25 cm and 1 m at different localities appears to be mostly composed of hill wash. Although the distribution of grain size of sediments of this formation does not markedly differ from that of earlier deposits, it neither compares with them in compactness, nor it seems to contain comparable amount of kaolin. It would mean that during the process of the deposition of these sediments the climate did not turn so dry as to produce any noticeable amount of rock waste. The entire deposit appears to have been formed by the sediments brought mostly by seasonal rains from the neighbouring hills, and partly by surface erosion of the valley itself. However, the deposit is fairly rich in sesquioxides, which have also provided reddish colour to it. It is also noteworthy that the deposit is also characterised by low accumulation of surface organic matter, which would indicate less rainfall and sparse vegetational cover. The lower part of this deposit has preserved habitational floor of Mesolithic phase in the locality F. It has a radiocarbon date of middle of the sixth millennium B.C.

P.C. Pant and S.C. Singh Rana

6

An Ethnographical Account of the Kodas of Kharagpur Hill Range

As mentioned earlier, the Kharagpur hill range forms the tribal belt of the Munger district. The entire belt is very sparsely populated, small tribal villages being located almost invariably in valleys. The small village of Paisra is inhabited by the *Kodā* tribe, the total population being around 125 persons only. We have collected some ethnographical informations through the study of this *Kodā* community of Paisra, which may be relevant for understanding cultural patterns of the Acheulians, as well as, Mesolithic settlers.

The *Kodā* is essentially a hunting tribe, as is evident by their socio-economic traditions and customs. Bow and arrow are the traditional weapons used for hunting, though nowadays they also use country made guns at times. However, the culture has substantially transformed during the last few decades, and the *Kodās* are now also practising agriculture, though to a limited scale. It appears that the transformation in the way of life of these people was the result of certain ecological factors as well as gradual acculturation. As a result of continuous and large scale exploitation, the forests are fast dwindling. It has a telling effect on the animal population of the forest, as well as, vegetation. The animals which were easily available in abundance for hunting up to the beginning of this century have now become indeed very rare. As a result of these ecological changes, human population of the Kharagpur hill range can no more subsist on animal food. The inhabitants of Paisra have to subsist now primarily on vegetational products of the forest. Since they are intimately associated with forests and have gathered comprehensive knowledge about the vegetational products of their surroundings, they manage to collect vegetational food almost throughout the year. A brief account of the types of vegetation exploited by them for consumption in various seasons is given below.

During the spring and summer seasons the main vegetational food available from the forest comprises of flowers of *Mahua*, (its seeds are used for extracting oil), fruits of *Kendu, Bel, Piyar Belhacha*, etc. It is worthwhile to note that flowers of *Mahua* often serve as staple food particularly in the days of adversity. They are consumed in large scale not only by tribals but also by the non-tribal poor folks of north Indian villages.

No fruits are available during the rainy season. However, there are many plants and creepers which provide food during this season in the form of leaves and roots. Leaves of at least three small plants *viz., Awanti, Kuar* and *Chakaura*, which grow wild in abundance in the Kharagpur hill range, are frequently consumed by tribals. Similarly, roots of certain species like *Bauka, Gathia, Tena, Arua* etc., are available to them for consumption during this season. They are eaten raw as well as boiled.

Immediately after the end of the rainy season, the tribals depend to a very large extent on various species of wild cereals. The important ones among them are *Sauva, Khairi, Kauni* and *Madua*. However, it is not particularly easy to extract grains from these wild grasses and utmost care has to be taken for the purpose. These grains are sometimes preserved for winters also when staple food is difficult to find. Besides, there is one other species, *viz., Lalka Baingu*, the root of which tastes sweet and is eaten raw as well as boiled.

During winter months, only a few varieties of fruits are available to the tribals from their natural surroundings. The principal species are *Makaya, Bhurkunda* and *Ber*. It must be stated, however, that winter fruits are available in abundance.

Thus, the above account clearly demonstrates that the tribal population of the Kharagpur hill range exploits vegetational products of forests throughout the year, and it appears certainly possible for small human groups to subsist entirely on vegetational food.

Besides the above there are many vegetational species which are used as medicines by the tribals. In addition to the well known species *Harar, Baheda* and

Amla, they also exploit *Anant maul, Chiraita, Rakta Trehan, Grihvada, Dard Maida, Banga,* etc. It may be noted that fruits of some of these species are consumed not only at the time of various types of illness but also otherwise in normal course. One of the species of grasses locally named as *Sabe Ghas* provides wild cotton, which is frequently used by the tribals for covering wounds.

The *Kodās* make their huts with the help of three categories of forest products. While they use suitable branches of *Sal, Unkatha, Hiran* and also bamboos for preparing frames of their huts, various creepers like *Chanpam, Duddhi, Choekari* and *Girna* and also *solu* grass provide them strong ties, needed for strengthening the wooden frame. The long grasses like *Chirokhar* and *Sain-khar* are used for covering roofs and sides of their structures.

Due to recent transformation in their living patterns the *Kodās* now lead a sedentary life and live in small villages. Paisra is a typical example of their village. It is interesting to note that the different huts seem to have been placed in accordance with a definite pattern. It appears that each kin group among the *Kodās* who migrated to settle at Paisra made its cluster of huts at a distance of about 50 to 80 metres from each other. With the subsequent increase in the kin group extra huts were built around every nuclear settlement. Thus, the entire village is divided into four or five clusters of huts, each representing a kin group.

When necessary, the *Kodās* also make purely temporary shelters, most probably a reminder of their nomadic life. It may be recalled that the practice of constructing temporary huts can be traced among several nomadic tribes of the world. Two types of temporary shelters are normally constructed by the inhabitants of Paisra. In the first case, they fix two fairly straight forked branches of trees in the ground, separated from each other by about one metre or a little more. A wooden beam is then placed on the forks of these two pillars. Thereafter some sticks are placed on the beam in such a way as one of the ends of the sticks touches the ground and the other rests on the beam. These sticks are then covered by various leaves and some times also by long grasses normally used as roof covers of huts. At times these sticks are tied on the beam with the help of various creepers, with a view to protecting the shelters against wind. The other type of temporary shelter is indeed easy to make. In this case several branches of a tree or a group of trees situated close to each other are tied together by creepers, thus making a sort of rough frame of a roof. Thereafter, suitable leaves are cut and placed over this frame to make the shelter. Such a shelter is usually constructed in case of emergency when the tribals either need some reprieve from oppressive heat of summers or they are caught unaware by sudden rains.

The above ethnographic details pertaining to certain life patterns of the *Kodās* have been collected with a view to ascertaining whether or not they can help interpreting the way of life of the Acheulians and Mesolithic inhabitants of Paisra in particular, and Stone Age cultures in general.

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The Acheulian Settlers of Paisra

In the preceding pages an attempt has been made to describe the location of trenches in various localities, stratigraphy revealed by their excavations, habitational remains, if any, and distribution of artefacts including finished implements. These descriptions obviously give rise to various questions associated with the way of life of the Acheulian settlers of Paisra. In the following pages we propose to summarize the techno-typological features of the tool-kit and to interpret the entire data with a view to understanding culture patterns of the Acheulians.

Techno-typological Features

Paisra is one of those Acheulian industries which contains a very limited number of handaxes, cleavers and similar other types, and an overwhelming proportion of various tools made on flakes. In fact, except for the bifaces and cleavers, Paisra industry contains all the tool types which normally occur in the Middle Palaeolithic industries, specially a large number of Levallois flakes and cores. Owing to the inaccessibility of any of the full published accounts of Acheulian industries in India it is not possible to make a comparative study of our collection. The Acheulian site of Hunsgi has brought to light habitational remains, details of which have also been published. The number of tools at this site is very limited. This enables us to make techno-typological comparison between the two. (Paddaya K. 1982). It may be presumed, however, that Paisra would not have been an isolated industry; there should be several others, particularly in eastern India, which could be compared with it. Our observations on the Acheulian collections from Attirampakkam, Adamgarh (in the collections of the Archaeological Survey of India, at the Prehistory Branch, Nagpur) and Bhimbetka (in the Deccan College, Pune), further confirm this presumption (Jayaswal, V. 1977), as quite a few characteristics of the Paisra industry could be noticed in these industries also.

The Acheulian character of Paisra industry is represented by various types of handaxes and cleavers. In case of the former, lanceolates dominate. Besides the fine bifacially flaked oval body, these are marked by elongated narrow points (Figs. 31-32). The industry also contains a limited number of ovates (Fig. 33). The other fossil type of the Indian Acheulian facies is cleaver which also occurs in the Paisra collection. Both the types which characterize the Acheulian phase of Africa and Europe are present in this category. Large and small cleavers made on Para-Levallois and Prepared flakes (Figs. 35-36) bear techno-typological resemblance to such African Acheulian specimens as the ones from Isimila and Kalambo Falls. On the other hand, there are a few cleavers in our collection (Fig. 38) which have similarities with the European cleaver, as these are bifacially flaked handaxe shaped specimens with broad cleaver edge. The Acheulian flaking on these specimens and that on the handaxes is of fine nature and seems to represent an advanced stage.

It may be mentioned that the Paisra industry contains a small proportion of handaxes (around 10% in most of the tool-bearing localities (cf. Tables 8, 12 & 16). Similarly, the frequency of cleavers is also low. But this tool-type has a wide frequecny variation, *i.e.*, 1.92-15%, in various trenches of the localities C and D. The chopper and chopping tools which are made on nodules together form 5-15% of the finished tools in various trenches of the localities C and D (cf. Tables 4, 8, 12 & 16). Contrary to this, the tools made on flakes are about 70% of the finished tool categories at Paisra. Among the flake tools, the denticulates and notched tools are predominant. The side scrapers contain almost all important types. Besides, mention may be made of a few burins (Figs. 51-52), end scrapers and borers (cf. Table 12), the last two being atypical.

From the point of view of the blank detaching technique, the Levallois is well represented (10%-21% in the localities C & D) in this industry. The occurrence of Levallois points (0.44%-4.13%, cf. Tables 6,10, 14 & 18), is another noteworthy feature of the Paisra Acheulian facies. Prepared non-Levallois flake is the most dominant type. It is also important to note that blades form integral part of the tool-kit and their frequency ranges between 4% and 11.2%.

The retouching as a rule is fairly uniform on the flake tools. It is simple unifacial, bifacial, alternate and some times partly from dorsal and partly from ventral on the same edge. Scaliform retouch was also observed on some of the specimens. On the basis of the above mentioned characteristics it can be inferred that the tool-kit of Paisra belongs to an advanced Acheulian tradition.

It may be useful to recall the evidence for Acheulian industries belonging to the Riss glaciation period in the western Europe, for a proper evaluation of the Paisra industry. Here one finds two broad groups of Acheulian industries (Bordes F. 1986). One of them contains a very large proportion of handaxes, while in the other it is the flake tools which occupy a dominant position and the handaxes appear in a very limited number. The so called Commont's Workshop found at Saint Acheul in France belongs to the second group, in which out of more than eleven hundred artefacts there are only fifteen handaxes. The flake tools include various types of side scrapers, knives, burins and notched and denticulated implements. But the Levallois technique is either absent or rare. At Cagny near Amiens, also in France, besides handaxes and various flake tools including a good number of notched and denticulated tools, there is evidence for the wide spread use of Levallois technique. The Swanscombe industry found in the suburbs of London also contains a considerable number of flake tools. In some of the Upper Acheulian industries of the Somme valley of France even some typical Upper Palaeolithic blade tools appear. Thus, the occurrence of a very low proportion of handaxes and cleavers and a high percentage of varied flake tools along with the wide use of Levallois technique in the Paisra industry are in conformity with one of the major trends found in the Acheulian stage.

Mode of Occupation

The foregoing account provides sufficient clues to the fact that Paisra is one of the rare Acheulian sites of the Indian sub-continent which was undoubtedly inhabited by human groups. The extensive survey of the Paisra valley and the surrounding hills distinctly demonstrated that the Acheulian inhabitants preferred to occupy the valley as against the nearby hill tops, which are fairly plain and certainly not unsuitable for habitation. Total absence of Acheulian debitage on the tops and slopes of the hills substantiates the conclusion. The fact that even outside the Paisra valley the Acheulian cultural remains have been found in the valleys only, such as a site near the Chormara village and another near the famous hot spring of Bhimbandh, provides supporting evidence to our observations. What

were the factors which prompted the Acheulians to prefer valleys against the hills for habitation ? In the absence of any conclusive evidence, it is indeed difficult to identify these factors. As far as the flora and fauna are concerned, upon which presumably depended the survival of these groups, they must have been more or less similar in both the valleys, as well as, the hills.

It has been observed that almost the entire Kharagpur hill range, in the middle of which Paisra is located, is rather poorly drained. There is hardly any perennial river, except for a few sporadic natural springs, such as those of Karmel, Rameshwar Kund, Bhimbandh, etc., all located in the valleys. In fact, the entire present day population faces acute water shortage during the long dry season of the year. The inhabitants of the Paisra village have to walk as much as five kilometres to fetch water from the Karmel spring during the summers. However, the scarcity of water is much more acute in the hill tops than the valleys. During our explorations, we noticed that there was no observable source of water in the hills and one has no other alternative but to climb down to the valleys for quenching ones thirst. If the water resources in the area were the same during the time of Acheulian occupation as they are today, the human groups must have observed the total scarcity of water in the hill tops. If our presumption is correct, this must have been one of the fundamental reasons for choosing the valleys for settlement.

It is possible to speculate other reasons as well. Our excavations convincingly indicate that the Acheulian inhabitants settled on a thin deposit of tiny haematite pellets resting directly on the bed rock or, though rarely, on the bare rock itself, and there was hardly any earth cover on the rocks. In the absence of suitable soil base the vegetation cover on the surface must have been rather thin, at least in the middle of the extensive valley of Paisra. This environmental peculiarity might have provided security to the human population in the valley against the carnivorous species which might have preferred to reside in the hills and their slopes coverd by thick forests. It is only logical to presume that they avoided confrontation with carnivores in view of their limited weaponry. Similarly, it may be presumed that certain vegetational species, which probably bore fruits suitable for human consumption, grew only around the water resources of the valleys. It would have been obviously easier for the human groups to exploit them fully, if they occupied the valleys and not the hill tops. These may be some of the factors which singly or collectively prompted the Acheulians to select valleys for their habitation. But all these propositions are no more than logical speculations in the absence of any supporting evidence.

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Our intensive investigation at Paisra also reveals that the Acheulian inhabitants usually selected higher places of the valley for occupation, though they manufactured their implements in all areas irrespective of their undulations. It has been observed that artefact scatters of the Acheulians occur both on high and low surfaces of the valley without any distinction. Yet definite evidence for habitation in the form of stone alignments and post-holes are noticed only on the higher contours of the surface. The fact that they avoided, perhaps intentionally, the low lying areas has been amply demonstrated in the excavated trench of the locality G. Here the habitational floor is markedly undulating with a prominent depression in the middle. It was significant that artefact scatters as well as stone alignments and post-holes were found only on surrounding raised surface and the depression yielded merely a few stray stones. The evidence from this trench almost conclusively proves that the artefact scatters found on the floor of various excavated trenches have been preserved in their *in situ* position at this site. Had they been distributed by natural agencies such as rain water, we would have found a noticeable concentration of artefacts as well as other rock pieces in the depression of the excavated trench of the locality G.

The Camp-base and Resource-base areas

The Acheulian *debris* of the Paisra valley, when viewed in terms of the remains of the living populations, can be divided into the camp-base and the resource-base areas at the very outset. The former is related to the localities where habitational floors and/or workshops and artefact utility areas are located, while the latter was the surrounding region which was being exploited by the Acheulians for acquiring daily utility items, such as the vegetational components for food, weapon and shelter, fauna for food and other domestic use, and rock in the form of raw material for tool and equipment making. The nature and extent of these two different activity zones have been discussed below.

Although sporadic Acheulian artefacts are to be found almost in the entire Paisra valley, from the village Kandani in the east upto Bariara in the west and from the foot of the northern hill range upto the Dudhapani *nullah* in the south, the actual concentration of artefact scatters is to be noticed only around the Paisra village (Fig. 25). The area in which we noticed actual concentration of stone artefacts measures about a little less than two square kilometres, while the distance between the Kandani and the Bariara is a little more than six kilometres and that from the northern hills to the southern *nullah* about three kilometres. Thus, the area of activity measures about a little more than 18 square kilometres. This means

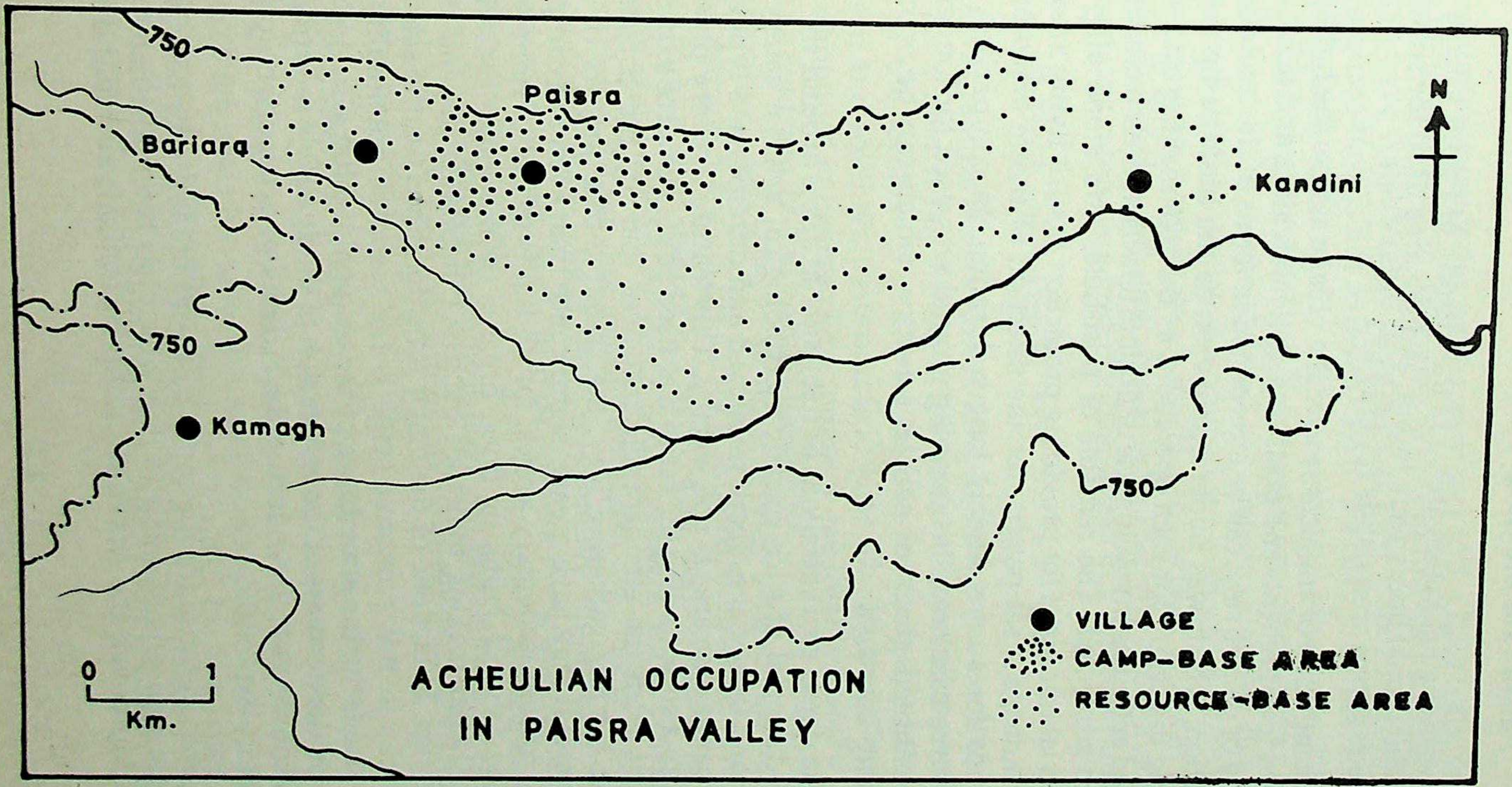

750
Paisra
Bariara
N
Kandini
750
Kamagh
750
● VILLAGE
CAMP-BASE AREA
RESOURCE-BASE AREA
0
1
Km.
ACHEULIAN OCCUPATION
IN PAISRA VALLEY

Fig. 25. Acheulian occupation area in Paisra valley.

that the ratio between the habitation area, *i.e.*, the vicinity of Paisra village where workshops and habitational floors were found, and the area used for subsistence exploitation or the resource area stands roughly at 1 : 9 or 1 : 10.

The dense concentration of artefacts around the village as also the habitational remains such as stone alignments and postholes, tool fabricating and utility areas, either individually or collectively, can be interpreted in terms of the nucleus of the Acheulian habitation, which was under occupation as the basic camp or living area. Besides being the centre for such operations as the tool making and various domestic or related activities involving use of lithic artefacts at their base, this area in parts was also protected. The remains of post-holes and stone alignments suggest organized labour input for providing protection to such living areas. This would not only indicate a set pattern for the selection of living areas but also occupation of these for a considerably longer duration. In comparison to the surrounding resource-base area, this camping ground was used for longer duration by the concentrated group of people, a feature which can be commonly attributed to a camp-base area.

Contrary to the dense concentrations of habitational *debris* around the village of Paisra, sparse dispersal of such specific morphological artefact categories as handaxe, cleaver and large flakes (both retouched and unretouched types) at the periphery of the camp-base area is noteworthy. This feature in every probability suggests that the area surrounding the camp was used as the resource exploitation zone. It is evident from the ethnographic instances that for the communities subsisting on the hunting-gathering way, the resource-base area is of utmost importance. At times it may have greater significance than even the camp-bases. In non-sedentary or semi-sedentary stages, for all kinds of utility items such as actual food in the form of fauna or flora, organic or inorganic materials for equipments, the shelter making materials etc, the inhabitants depend on their natural surroundings. In fact one of the major considerations for the selection of the camp-base locus in this economic stage is the resource potentiality of the neighbourhood. Similarly, the abundance of the original habitat also depends in most of the cases on the decrease or the exhaustion of the available required items. At Paisra, this resource-base zone during the Acheulian occupation appears to have been repeatedly exploited.

The ethnographic instance for the camp-base and the resource base zones in the Paisra valley is somewhat similar to that which has been postulated for the Acheulian times. Moreover, the Acheulian camp-base area is also found suitable for habitation even today by the members of the *Kodā* tribe, the inhabitants of the Paisra village. Basically belonging to the hunting-gathering community, the living groups have considerably large area as their resource-base. The enlargement of the resource-base is not so much due to the change in their food acquiring habits, but it appears to be related to their sedentary behaviour. The *Kodās* now live in villages for considerably long durations at one place, during which the resources of the immediate neighbourhood are liable to diminish. But, it may be logically presumed that the valley if occupied for a short duration by small groups of hunter-gatherers can successfully cater to the basic needs of the inhabitants for a long period. Acheulian artefact scatter and activity areas thus appear to follow the present day camp-base resource-base zones in a restricted manner.

The specialized activity areas

It was further observed that even in the camp-base area the concentration of artefact scatter is not uniform. The actual concentration starts from the western part of the locality A, and artefacts become gradually less in number towards eastern and southern parts of this locality. The highest concentration of artefacts can be noticed in the area lying north of the locality B and the localities C and D. On the contrary, in and around localities E, F, and G the artefact scatters become comparatively less fequent. In the area lying between the locality D and E, in the middle of which the village Paisra is situated, the artefacts are found only sporadically. Among the localities E, F and G also, the last named appears to be richer in artefact clusters than the other two. Locality E is the poorest in respect of tool assemblages. These observations lead us to conclude that artefact concentrations are thicker in the localities which were mainly utilized as workshop areas for long duration. In these workshops the ratio among the finished tools, cores, flakes and chips remains at about 1 : 1.5 : 4.3 : 15. Similarly, artefact concentration is low to very low in the localities which were utilized either as living areas or rarely as workshops. The ratio of various above mentioned artefact categories in such localities as E and F is 1 : 0.5 : 1 : 0.1.

The clusters of artefacts with flaking refuse and the accompanying finished tools which have been found in the camp-base area, mostly away from the living floors, is another noteworthy feature of the Acheulian behaviour in this valley. In most of the cases the tool-fabricating spots and the utility spots lie close to each other, as was the case at the localities D and C. In other cases small working spots of artefact flaking were also noted here and there in the camp-base area. The small spots appear to be individual short duration flaking spots, where one lump of stone has been worked upon. But the dense clusters with larger quantities of flaking refuse may indicate a repeated use of the spot by more than one individual. Even in such instances a number of small patches can be observed on the plan (Fig. 6), which may be taken to represent the individual fabricating spots.

The morphology and the dispersal pattern of some of the major artefact categories of Paisra tend to provide clues regarding the Acheulian behaviour involving the craft specialization and specialized use of the implements. In the case of handaxes, for instance, among the various forms, the lanceolate Micoquian type has been found rather frequently. One of the characteristic features of these specimens is the long thin carefully trimmed point (Fig. 31). What appears rather intriguing with reference to these handaxes is the observation that the tip of the point is broken almost in every case, thus suggesting their use in some particular manner. It appears that these lanceolate handaxes were struck aganist hard surfaces during the process of use with the result that the tips of almost all of them broke down.

The context of the handaxes at Paisra site is noteworthy. It was observed that the vicinity of the occupational floors with post-holes, particularly at the locality D where a group of post-holes was unearthed, retained scatter of handaxes with broken tips. The tips of these implements were found to be located within a radius of about a meter or so in most of the cases, suggesting the instant discard of the implements after the breakage at this spot. The post-holes of Acheulian floors at Paisra, therefore, appear to have been dug with the help of some of these pointed handaxes, the tips of which appear to have been knocked off while digging the exposed hard surface on which the Acheulians lived in this valley.

Probable use of handaxes of the Paisra tool-kit for digging edible roots has been referred to a little later. Evidence favouring such a presumption can be seen in the wide scatter of handaxes almost in the entire length and breadth of the resource-base area.

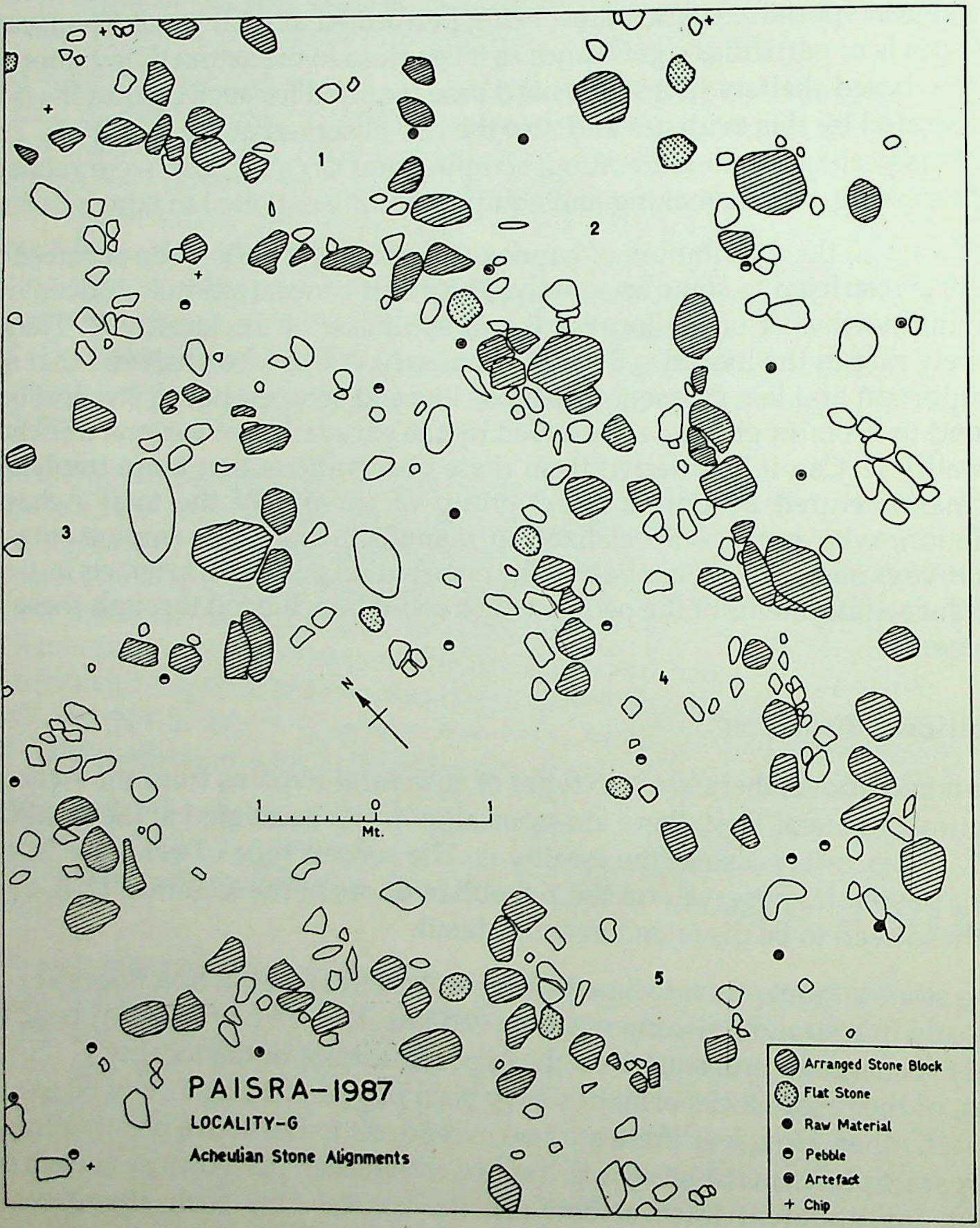
It was also observed that various artefact types, particularly the handaxe and cleaver, do not seem to exhibit any uniform pattern of distribution. For, certain areas of the site were particularly rich in both handaxes and cleavers. The best example of this type of concentration is the exposed area lying west of the excavated trenches of the locality D. Here the tool clusters occur around several large blocks of stones occupying almost a central position (Fig. 6). In this area, as many as twenty-one handaxes and fourteen cleavers along with a very large number of other artefacts were found lying. The scatter of the tools with specific morphological features such as the handaxe and cleaver around large flat natural rocks suggest specialized operations being performed at such spots. The location of this spot is of particular significance as it lies close to the actual living floor with post-hole-based shelters. The stable hard base required for such operations is also demonstrated by this evidence and also the one observed at the locality C. These operations perhaps included cutting, scraping and digging, and were related to food processing, shelter making and equipment (of wood etc.) making efforts.

Contrary to the distribution of handaxes in the entire valley, the occurrence of cleavers is restricted to some areas only. Their best concentration is noticed in the area lying northwest of the locality B and southeast of the locality C. They are extremely rare in the localities E and G. Similarly, it was also observed that some less important and less frequent tool-types like end scraper, point, atypical borer, etc., tend to occur in groups, as revealed by the excavation of various trenches in the locality D. Can it be inferred from these observations that these implements were manufactured by only a select group of persons of the total Acheulian population, who perhaps specialized in manufacturing these implements. The alternative explanation would be that the distribution pattern of artefacts indicated particular requirements of the people which could be achieved through these very implements.

Habitational Structures

As noted above, there are two types of structural remains from the Acheulian habitation of Paisra. First, there are stone alignments excavated at the localities E and G, and possibly also at the locality C. The second type of evidence is in the form of post-holes observed on the Acheulian floors of the localities D, E, and G. Both these need to be discussed in some detail.

The stone alignments associated with the Acheulian habitation floors at Paisra are mostly in a straight or somewhat curved line, though a few also appear to be roughly rectangular and square on the exposed surface of the locality G (Fig. 26). In most of the cases blocks of stones have been placed at a distance of 30 to 60 cm from each other. However there are two exceptions to the above observations. At two separate places in the locality E, the stones had been placed close to each other without any apparent interval between the blocks. One such alignment was excavated in trench 2 where it appeared as a little more than four metres long and a little less than one metre broad continuous wall. In trench 4 of the same locality


1
2
3
4
5
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1
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1
Mt.
PAISRA-1987
LOCALITY-G
Acheulian Stone Alignments
Arranged Stone Block
Flat Stone
Raw Material
Pebble
Artefact
+ Chip

Fig. 26. General pattern of the stone alignments of Locality G.

there was a small curved structure of 65 cm length and 14 cm width in which several stone pieces had been laid close to each other. In respect of stone alignments, the locality G of Paisra appeared to be most significant, where dozens of such structures were noticed on a raised surface exposed by subsequent denudations. A few similar alignments were also exposed in the only trench excavated in this locality and the adjacent area which was covered by 20 cm to 90 cm thick deposit of compact sandy loam. Their very nature and a fairly large number indicate that they were the result of human workmanship. Since these alignments have been found invariably associated with Acheulian stone tool assmeblages, the inter-relationship between the two seems to be unquestionable.

It may be recalled that stone alignments had been found associated with the Acheulian culture and some other cultures of the Riss glaciation. One such arrangement of stones had also been reported from the Acheulian site at Hunsgi in South India (Paddaya. K. 1982). In fact, many types of structures, presumably meant for habitation, have been excavated at several Acheulian and other late Pleistocene sites in the world. The earliest among these appears to be that of Terra Amata near Nice in Southern France (De Lumley H. and Y. Boone. 1976 : 644-55). The worldwide evidence suggests that human groups of the late Pleistocene, though food gatherers, also settled down at some suitable localities for a certain period of time in the course of their nomadic life.

Alignments of blocks of stones have been generally interpreted in two ways. Their presence may indicate a camp site in which stone blocks were placed in a row "to hold down wind-breaks or tent covers", as observed in the deserted camp sites of modern nomads (Wymer J. 1984: 131). Alternatively, it has been suggested that the alignments formed hides for the hunters in open landscapes (Wymer J. 1984: 132). With reference to the site of Latamne in northern Syria, John Wymer has argued that the limestone alignments could have represented hides for the hunters, particularly in view of very few animal bones at the place.

As noted above, there are a number of stone alignments at Paisra, located at different localities, though a big concentration of such alignments has been observed at the locality G. Besides, there is total absence of any faunal remains in all the Acheulian floors excavated so far, including those with stone alignments. In spite of this, it is hardly reasonable to interpret this evidence of human activities as forming hides for hunters. The mere absence of bones cannot be regarded as an argument in favour of interpreting these as such since faunal remains did not seem to survive at Paisra either due to unfavourable environmental conditions or some other reason. Moreover, we should not loose sight of the fact that at certain places, *e.g.*, localities E and G, the stone alignments are also associated with post-holes. Additionally, some of the several alignments observed on the exposed surface of the locality G appear to form roughly rectangular, square, or semi-circular patterns, which incidentally are the common shapes of huts constructed by primitive settlers, such as Neolithic people of Tekkalkotta (cf, Nagaraja Rao & Malhotra 1965: Fig. 8 & 10), and Boyer tribe of Karnatak. All these observations, when put together, lead us to a fairly logical conclusion that various stone alignments constructed by Acheulian settlers of Paisra were meant to hold down hide covers or some sort of leaf covers for making temporary shelters.

The other evidence for structural remains is in the form of a number of post-holes. They are small pits, 15 to 30 cm deep, dug into the thick highly compact layer of haematite pellets lying invariably over the basal shales. They are mostly filled with light coloured silty clay or clayey silt, and can be distinctly noticed on the well brushed Acheulian floors. Very often big or small artefact clusters occur close to them. Most of these small pits appear in the group of two (Fig. 12). In the absence of any other plausible interpretation we presume that they served the purpose of post-holes, though wood remains have not survived in any of them. It is worthwhile to recall here that Paisra is not the only Acheulian site in the world where the evidence for post-holes has been excavated. The famous site of Terra Amata near Nice in France has preserved post-holes in the marine sand which have been interpreted as an evidence of earliest huts constructed by the Palaeolithic man anywhere in the world (De Lumley and Boone 1976 : 644-55).

The best evidence, however, comes from the locality D of Paisra where as many as seven of these pits were found concentrated in a small area. However, they do not appear to form any definite pattern, and hence it is only reasonable to conclude that all of them did not form a single structure.

The evidence in the form of two post-holes from the locality G can also be interpreted similarly However, the situation in the locality E is somewhat different. Here, there are as many as five post-holes in the western half of the Trench-3, but only two out of the five are large in size and considerably deep. The remaining three are small and shallow. One of the large post-holes and a small post-hole are close to stone alignments. It is difficult to determine whether the two post-holes as well as the stone alignment are the remains of a single shelter, or are indicative of two different types of structures put up consecutively with some interval.

The foregoing account clearly indicates that the patterns formed by the distribution of post-holes on the Acheulian floors at Paisra are of three types. These are — the existence of single post-hole, their occurrence in pairs, and occurrence of one or two holes with some arranged stones (Figs. 12, 15, 16, 17 & 21). Besides, stone alignments without post-holes have also been recorded (Fig. 26). Possible use of the post-holes and the alignments for holding various types of temporary shelters has been reconstructed with the help of ethnographic instance and line drawings (Figs. 27-29).

Two types of thatched shelters can be constructed with the help of two vertically errected posts (cf. Fig. 27, A & B). Shelter type A, as shown in the drawing, needs support of a tree, against which the leaves and branches are tied over a crude horizontal frame of branches. This frame rests over two upright poles. *Kodā* tribal people of the Kharagpur hills make such shelters as a protective device against the sun and light rain and use these for purely temporary purposs. It was observed by us that construction of this type of shelter takes less than half an hour with two persons working at a time.

The other type B shelter has been reconstructed on the basis of the account of the nomadic tribes of Andaman island (Redcliff-Brown, A.R. 1964; Pl. VIII). The description of the type by Redcliff-Brown reads as follows:

"There is, however, one type of hunting shelter that is usual. Two poles are cut and erected perpendicularly in the ground so that they stand about four feet apart and about four feet high. To the top of these is tied, with cane or creeper, a horizontal pole. A few poles or sticks of sufficient length are placed so as to lean against the horizontal pole at an angle of about 45 °, the ends resting on the ground. On these are placed any leaves that can be obtained, perferably the leaves of canes and other palms. The shelter thus consists of a single rectangular roof, one end of which rests on the ground, while the other rests on a horizontal bar attached to the top of two perpendicular supports. The shelter is built facing to leeward" (Redcliff-Brown, A.R. 1964 : 409-410). He further states that, "the simple Andaman hut as above described is entirely open at the front and on each side" (Redcliff-Brown A.R. 1964 : 411).

This type is also prepared by the *Kodās* of the Paisra valley when they stay for short duration away from their villages for collecting jungle products.

The above two descriptions of the temporary huts, shelter types A and B, provide valuable clues to the interpretation of the post-holes found at Paisra. If the

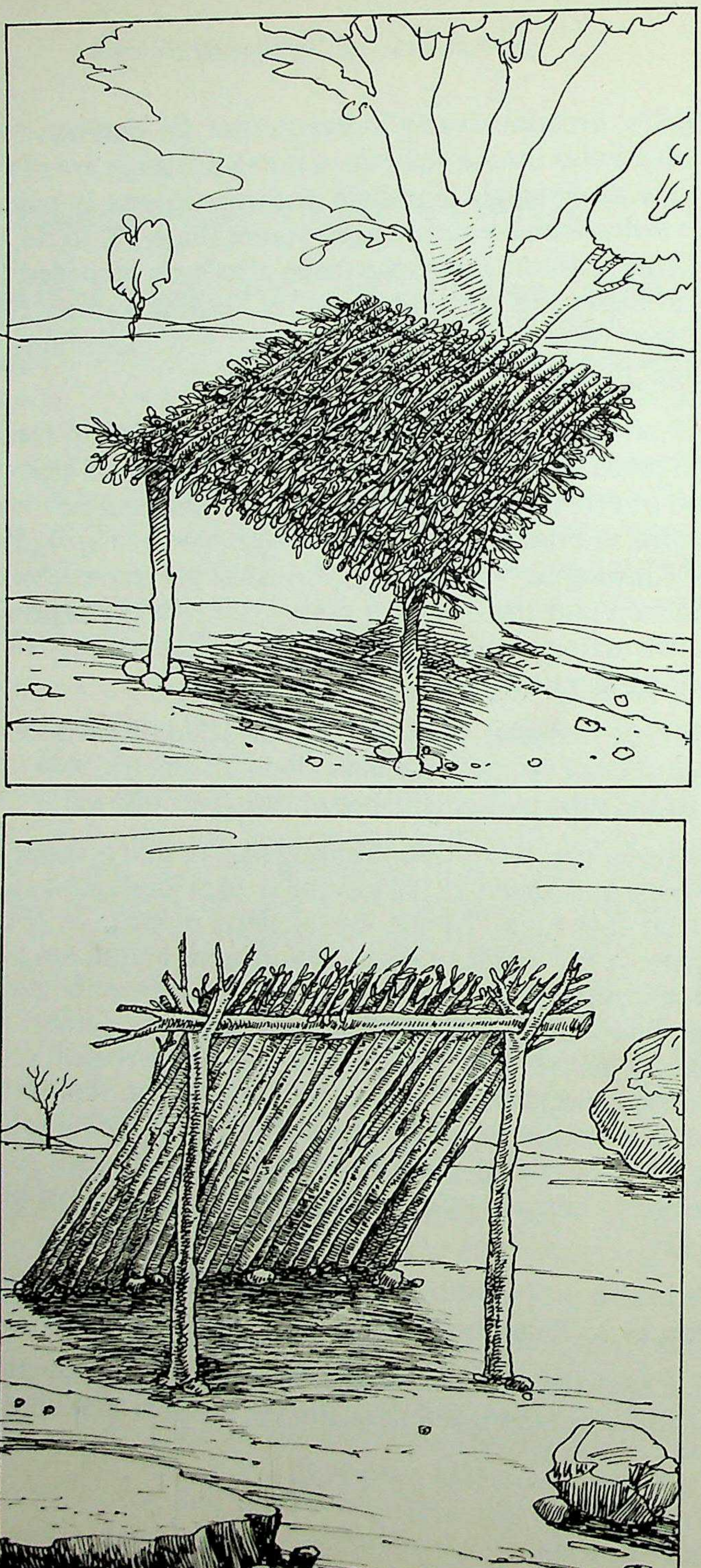

Fig. 27. Reconstruction of temporary shelters of types A & B.

Acheulians also made temporary shelters, each standing on two posts, it can be safely concluded that the cluster of post-holes in the locality D did not belong to one big shelter, but they seem to have formed as many as three to four separate small huts, constructed at various times by the same group of people or different groups.

Ethnographic examples also suggest that reasonably useful temporary shelters can be made by using just one vertical pole. At least three types of shelters can be prepared in this category (Figs. 28 & 29, C, D, & E). In type C, similar to the type A, support of a tree is sought. A thick low branch of a large tree is upheld by erecting a forked (V ended) post. Against this supporting branch, thin and broken/cut branches are placed in a way that their thicker ends rest on the ground while the opposite ends rest on the main branch in an acute angle (Fig. 28, C). An elongated V shaped hut can be formed in this case. In another instance, type D, the wooden post serves as the central support against which the branches are tied. The nature in which the cut/broken thin branches are placed (the thicker ends resting against the ground while the thinner opposites ends meet the central post) is similar to the earlier form (Fig. 28, D). At times, some stone blocks may also be placed for the support of the structure. Shelter type E is a rare form made by farming communities of Bihar, when they need resting place away from habitation and near the fields. Above one vertically errected post a thatched roof is tied in this case (Fig. 29, E).

There is a strong possibility that the types C and D, which have been described above, were being constructed by the Acheulians of Paisra at some localities. The evidence of the localities D, E and G may be interpreted using such models.

Temporary huts without post-holes, type F (Fig. 29), is another presumption which appears to be applicable particularly to the stone alignments of the locality G. A semi-circular and a rough rectangular shelter can be made by placing cut/broken branches with stone block supports. The branches in slanting position can be arranged in a similar way as has been discussed for the types B, C and E. Some of the nomadic tribes, particularly Semang, prepare shelters of a very temporary nature by placing a number of palm leaves on the ground in a semi-circle, so that the over-hanging ends meet in the centre (Redcliff-Brown, A.R. 1964 : 416). It may be pointed out that the variation in the Andaman palm-shelter and the one presumed for Paisra is due to the different ecological settings. For instance, the Paisra valley is devoid of palm trees, while in the Andaman region stone is rare.

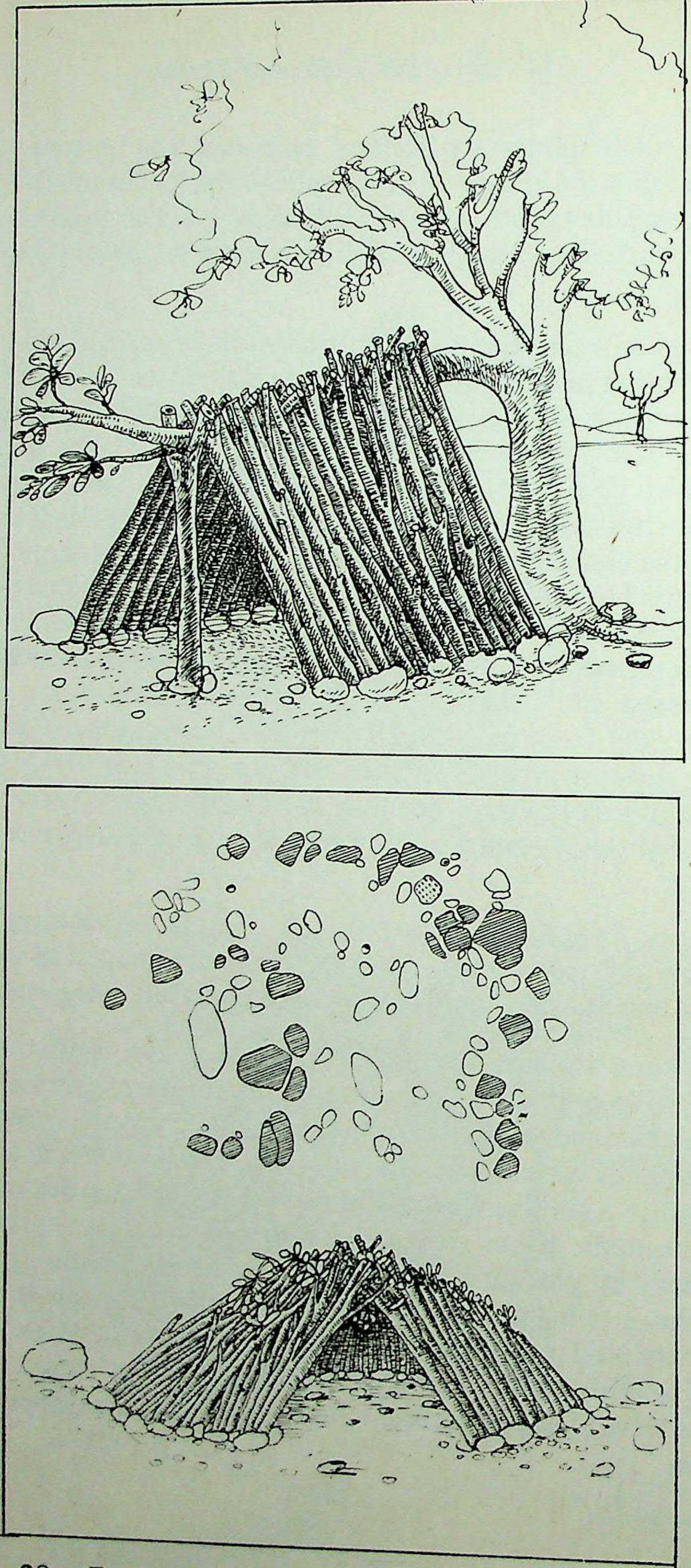

Fig. 28. Reconstruction of temporary shelters of types C & D.

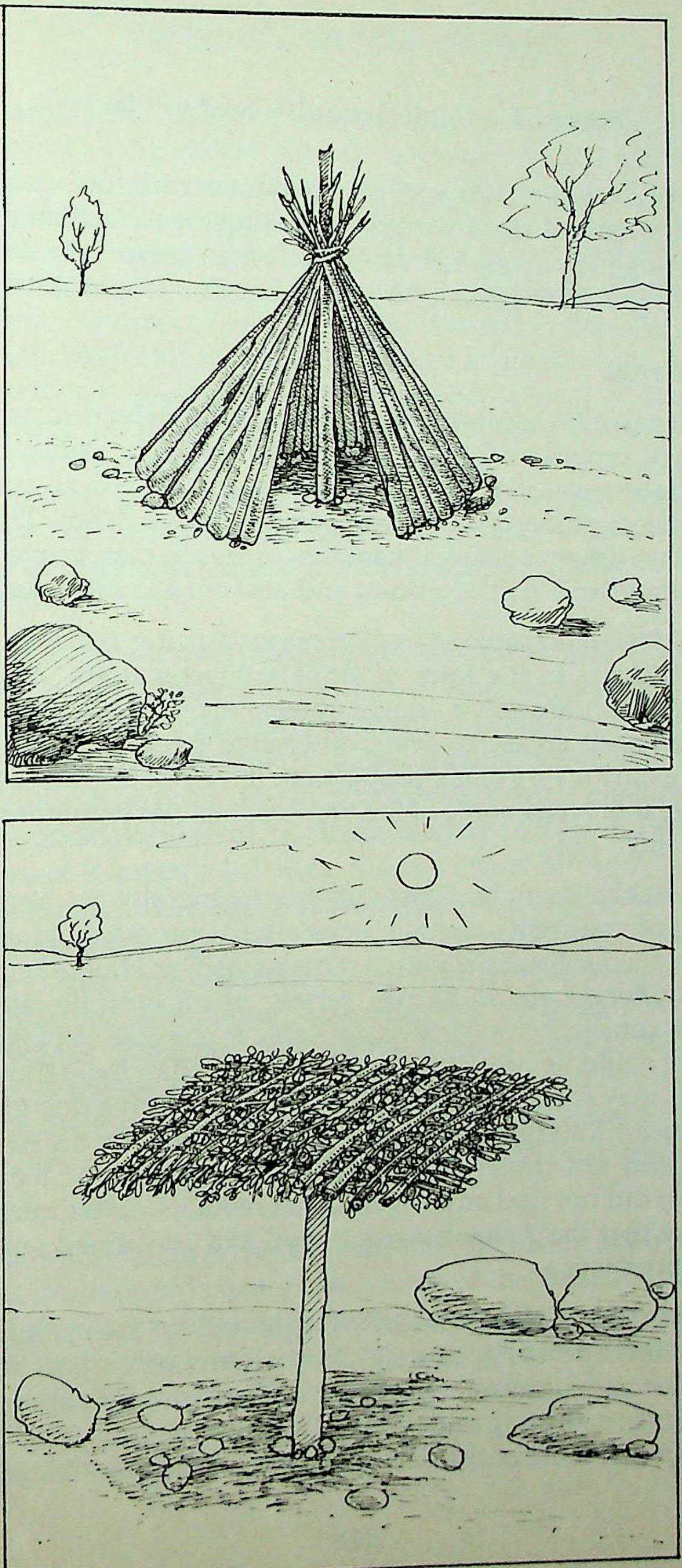

Fig. 29 Reconstruction of temporary shelters of types E & F.

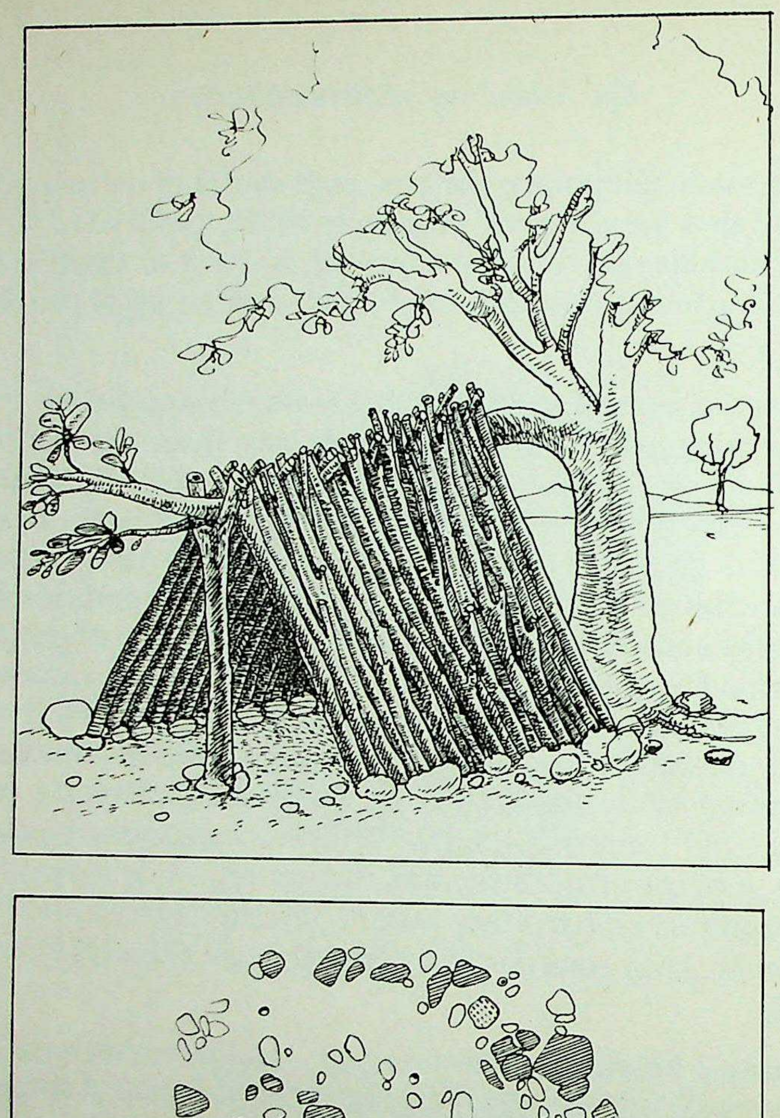

Fig. 28. Reconstruction of temporary shelters of types C & D.

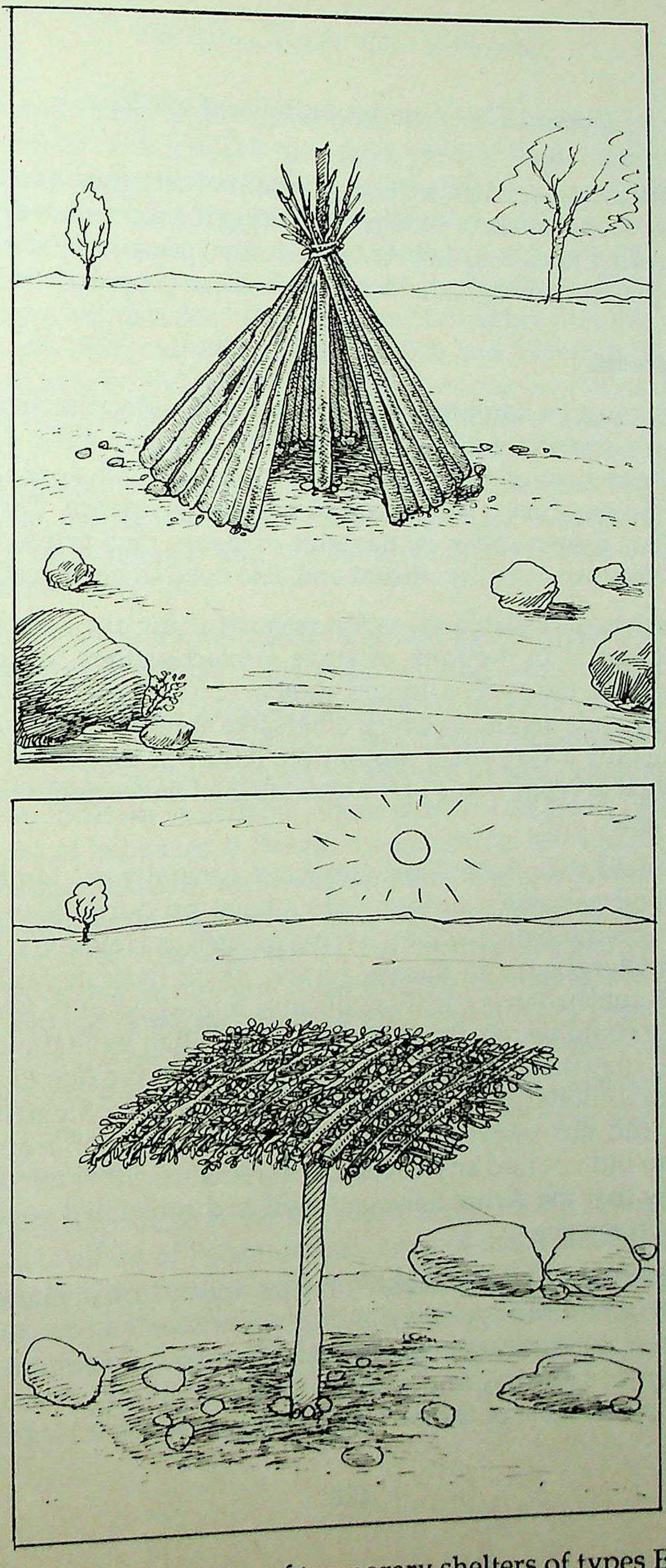

Fig. 29. Reconstruction of temporary shelters of types E & F.

It may be difficult to ascertain with any amount of certainty, as to which of the above discussed types of shelters were in use during the Acheulian times at Paisra. But there are strong indications to believe that small temporary shelters of more than one type were being constructed by the Acheulian people of the Paisra valley.

Mode of Subsistence

Once again it must be admitted that there is hardly any direct evidence from Paisra which may provide definite clues to indicate subsistence pattern of the Acheulians. In the absence of positive evidence we are left with no other alternative but to discuss the question on the basis of negative evidence. Though, we are aware, conclusions drawn solely on nagative evidence may prove at times very misleading, yet they are not insignificant and also need to be logically discussed.

The only evidence available to us for reconstructing the way of life of the Acheulians at Paisra is in the form of stone artefact-scatters. Among them, as mentioned earlier, there are only a limited number of tool-types. The most frequent types are various handaxes and cleavers, others like notches, denticulates and side scrapers forming only a very small proportion. It may be logical to presume that, besides the above tool types, some of the unretouched flakes might have also been used as implements.

It is mostly held that Acheulians subsisted generally on hunting different animal species and gathering various vegetational products. Many sites in the world have preserved substantial faunal remains such as Hoxne and Swanscombe in England and Olorgesailie in Kenya, Africa, which indicate fairly large scale hunting. But this conclusion is hardly applicable in the case of Paisra where not a single bone piece could be recovered from the Acheulian habitational floors. The absence of bones may mean that either they did not survive due to unfavourable environmental conditions (which appears quite plausible) or the Acheulian population of Paisra did not resort to hunting or scavanging for their subsistence. Similarly, we also did not find any vegetational remains, either micro or macro, to support the view that the Acheulians gathered and consumed vegetational products for their subsistence.

A close examination of the tool assemblages and their distribution pattern of the Paisra Acheulian culture appears significant for more than one reason. It is also important to note that there is perhaps no tool type in the assemblage which can be termed as a genuine hunting implement. However, it is not peculiar to the Paisra industry alone; in fact most of the Acheulian stone tool assemblages, particularly those of Africa and India, hardly contain hunting tools such as projectile points. Yet, a good number of Acheulian sites have yielded large quantities of animal bones pointing towards the meat eating habits of the people. This dichotomy of evidence may be reconciled by presuming that the Acheulians either practised trapping instead of hunting animals, scavanged dead animals killed by different carnivores, or used hunting implements made of perishable materials like wood. It is worthwhile to recall here that a few Acheulian sites like Kalambo Falls in Tanzania (Clark 1969) and twin sites of Toralba and Ambrona in Spain (Bordes 1968) are known to have yielded wooden spears or pieces of wooden implements which were perhaps used for hunting. A wooden spear is also reported from the non-handaxe Clactonian culture. Though the evidence is indeed fragmentry, yet it is significant and can be taken as a positive evidence for hunting economy. Can it be argued that the Acheulians of Paisra also made wooden implements for hunting, which unfortunately did not survive, as is the case with most of the Acheulian sites in the world?

The tool-kit of Paisra, if interpreted in terms of presumed functions, seems to represent three types of human activity, *viz.*, cutting, scraping and digging. This presumption is based on the generally accepted functional interpretation of various types of handaxes, cleavers, and retouched and unretouched flakes. Somewhat similar conclusions have been drawn by the micro-wear examination of some flakes, handaxes, and flake tools of the Hoxne industry (Wymer, 1982: 129). Among the various types of handaxes at Paisra, the lanceolate Micoquian type has been found rather frequently. One of the characteristic features of these specimens is the long thin carefully trimmed point. What appears rather intriguing with reference to these handaxes is the observation that the tip of the point is broken almost in every case. Does this feature point towards certain human activity? It appears that these lanceolate handaxes were struck against hard surfaces during the process of use with the result that the tips of almost all of them broke down. The numerous post-holes found on the Acheulian floor could have been dug with the help of these pointed handaxes. Similarly, they could have also been used for digging up edible roots.

To sum up, it is difficult to arrive at a definite conclusion about the subsistence pattern of the Acheulians of Paisra. In fact, none of the Acheulian sites examined so far in the Indian subcontinent have provided any definite clues to throw light on this problem. In the absence of any conclusive evidence we can only suggest some possibilities in this respect. The most logical suggestion would be that the

Acheulian population subsisted mainly on hunting, a conclusion drawn on fairly reliable evidence at various sites of Africa and Europe. But, we have neither hunting implements nor faunal remains to support this possibility with reference to the Acheulian culture of Paisra, or, for that matter, of the entire Indian subcontinent, Conversely, can it be suggested that the Acheulian population consisted of vegetarians subsisting on various vegetational products available in sub-tropical forests of the Indian sub-continent in abundance. The brief study of the way of life of the *Kodā* tribe of the Kharagpur hill range, described in the Chapter 6, indicates that it is possible for small groups of people to subsist only on forest products even today when the forests have been deplected to a very large extent. It may also be argued in support of this suggestion that there is hardly any Acheulian site in the Indian subcontinent, which has yielded bone scatters associated with habitational layers. But then, vegetational remains are also not known from any of these sites to support the prevalence of vegetarianism among the Acheulians.

8

Mesolithic Settlers of Paisra

As mentioned earlier, the cultural remains of the Mesolithic settlers of Paisra were located in two localities, *viz.*, B and F. While the excavated floor of the locality B seems to represent the peripheral area of the actual Mesolithic settlement, the evidence gathered from the locality F indicates veritable habitation, perhaps of shorter duration.

The large trench of the locality B measuring as much as 15 × 5m did not yield any structure in the form of stone alignments or post-holes. Nor it revealed any significant number of finished implements, which could have given some idea about the cultural traits of the Mesolithic settlers. The artefact assemblage recovered from the trench included various types of flakes, a few blades, cores, seventy five percent of which belonged to the category of blade core; only eight finished implements, some chips, and of course occasional blocks of quartzite meant as raw material. Among the finished tools not a single specimen falls under the category of microlith, though a notched blade forms part of the tool-kit. All the remaining specimens are made on flakes. Though three out of eight are side scrapers, yet in view of the very small number of finished tools, it is difficult to regard these as type tools of the industry. In spite of the indistinct techno-typological nature of the tool assemblage, the overwhelming number of the blade/bladelet cores in the debitage and the use of fine grained grey quartzite for manufacturing artefacts indicate that they are cultural remains of the Mesolithic inhabitants. In view of the irregular distribution of artefacts, a negligible number of finished tools, and the nature of the debitage, it is logical to presume that the trench of the locality

B represents only the refuse of the Mesolithic settlers. The nature of the evidence does not warrant any generalization about the way of life of the people.

Contrary to the evidence yielded by the locality B, the locality F provided unmistakable evidence of Mesolithic habitation. The thin habitational layer lies at the depth of 65 to 90 cm from the top level. As detailed earlier, a fairly extensive area of about 105 square meters was exposed for locating cultural remains of the Mesolithic people along with their habitational floor. The investigations reveal that it was a working-cum habitational area, where they manufactured their implements and, side by side, performed their day to day activities (Fig. 30) The following points emerge from the excavated remains recovered from this locality.

(i) The Mesolithic settlers had not only known the use of fire but it seemed to have played a very significant role in their way of life. On the entire floor there are numerous big and small fire places only a few metres away from each other. Three modes of lighting a fire seemed to have been adopted by them. First, they simply piled up some dry wood on the floor and burnt it. Second, before lighting the fire they placed a sizeable number of lumps of wet earth on a part of the floor. Third, they lighted fire in pits, the only example of this type was unearthed in Trench 3 which is fairly large. All the three could have been associated with different activities, though the possibility of any of them serving more than one purposes cannot be ruled out.

(ii) The scarcity of crypto-crystalline silica and near absence of other fine grained stones apparently forced the Mesolithic people to choose the next best alternative raw material, *viz.*, the fine grained quartzite, for manufacturing their implements. Experiments show that this raw material is not particularly suited for making bladelets and resultant microliths. This probably explains why the number of bladelets is very small in the considerably large debitage re- covered from the floor. It is also apparent from the technological evidence provided by the debitage that they had hardly perfected the blade/bladelet detaching technique. As part of their manoeuvres before taking off desired blanks, they first gave the lump of stone a workable shape and then prepared one or two platforms by careful chipping. The available cores and blanks demonstrate that no attempt was made to prepare a careful prominent ridge on the flaking surface of the cores. Instead, there is evidence to show that

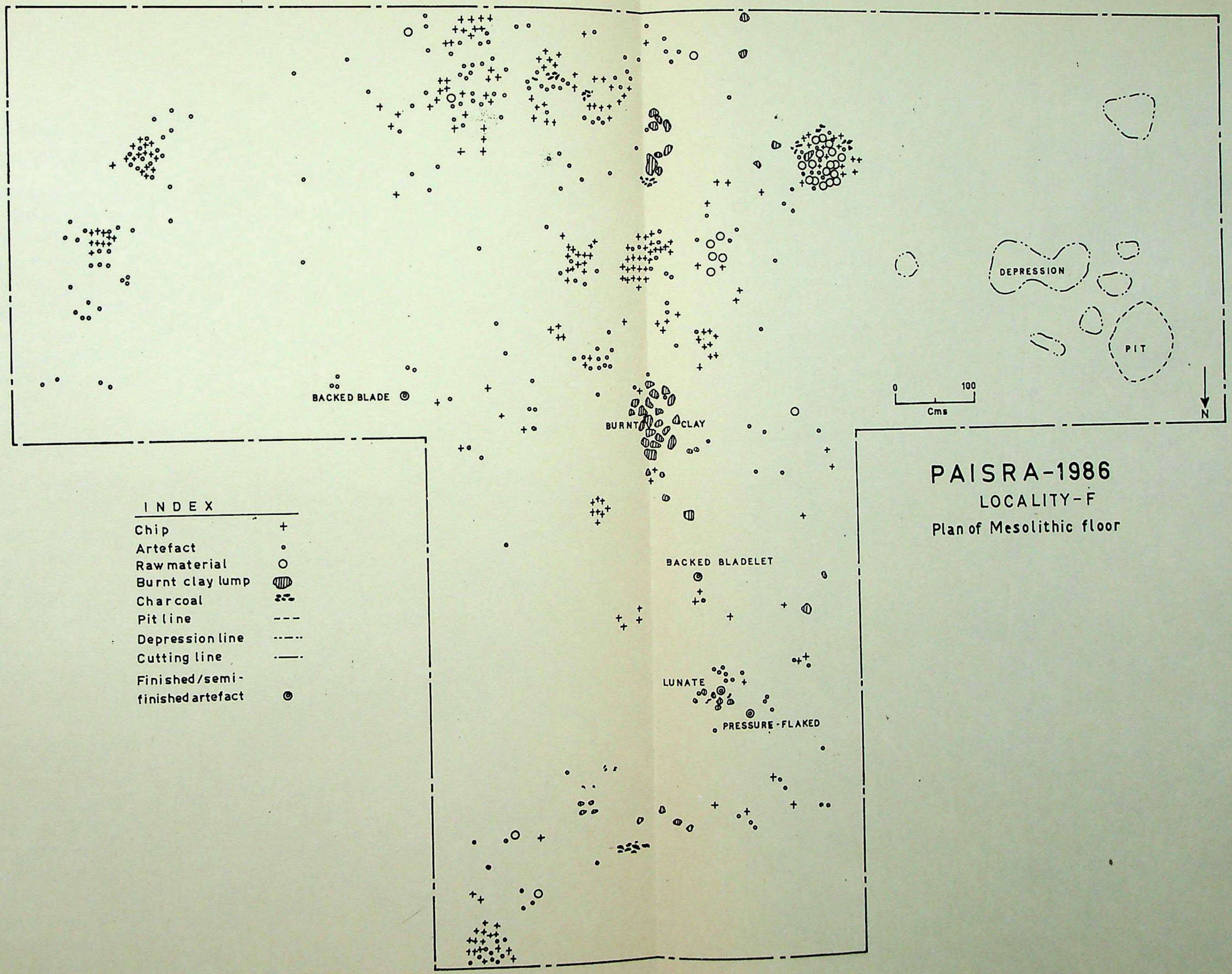
PAISRA-1986
LOCALITY-F
Plan of Mesolithic floor
INDEX
Chip +
Artefact
Raw material
Burnt clay lump
Charcoal
Pit line
Depression line
Cutting line
Finished/semi-finished artefact
BACKED BLADE
BURNT CLAY
BACKED BLADELET
LUNATE
PRESSURE-FLAKED
DEPRESSION
PIT
0
100
Cms
N

Fig. 30. General plan of the Mesolthic floor of Locality F.

attempts were made to remove blades from plane surfaces. Obviously, such attempts often could not produce desired results.

(iii) It is noteworthy that twenty-six finished implements, majority of them being microliths, were recovered from this Mesolithic floor. While one of these is a micro-gravette point, the remaining ones belong to the category of lunate, backed bladelet and side scraper. The absence of other tool types and the presence of mainly microliths point towards the Mesolithic character of the industry. The occurrence of only 26 finished specimens in an area of about 105 square metres is rather perplexing. It may be presumed that it was only a camp site and people took away most of the finished implements with them, when they migrated from Paisra to some other unknown destination. Alternatively, they prepared mostly hunting tools, and dropped these in the forest during their hunting operations and/or food collecting processes.

(iv) It was observed that some of the fire places were surrounded by a good number of chipped and unchipped stone pieces, numerous waste flakes and chips, a few cores, etc. In one case two microliths and a flake with marks of pressure flaking were also recovered from the vicinity of a large fire place. This leads to an obvious conclusion that raw material was heated before chipping. This procedure must have facilitated the processes of core preparation, detaching blades and bladelets, and minute final retouching of specimens. It is significant to note that one of the fire places was paved with a very large number of stones, obviously for the purpose of heating them. A similar observation was made with reference to the Son valley. "At Kunjhua, . . . Cobbles of Chert, Chalcedony and Agate . . . were heat-treated in shallow 'pit-ovens" (Clark J. D. & M. A. J. Williams. 1990 : 19).

(v) They also needed fire for roasting meat. The fire place in which the lump of wet earth were placed before lighting fire, was presumably meant for roasting hunted animals. As argued earlier, the lumps of earth must have been necessary to save the fire from extinction by liquids oozing out of roasted meat. However, it remains only a presumption, as no piece of bone, charred or uncharred, has been recovered from this fire place. Nor do we have any other indication in our support. Yet, it may be argued that one should not also expect bone pieces from a fire place, if only big chunks of meat were placed on the fire for roasting. The supporting evidence comes from a fairly big pit containing charcoal and fragmentary pieces of charred and uncharred bones, which has been interpreted by us as a refuse pit.

(vi) It appears logical to presume that the Mesolithic inhabitants of Paisra subsisted primarily on hunting, supplemented by occasional gathering of forest products. It needs to be clarified, however, that the excavations did not yield any evidence in support of our latter presumption. The hunting is attested by the type of tools they used, and also by the evidence of charred and uncharred bones from a refuse pit. Hunting presupposes nomadism, and the extremely thin layer of the Mesolithic habitation at Paisra denotes that people did not live at this place for a long time. During the course of our explorations in the forest region of the Kharagpur range we came across several Mesolithic settlements, such as those of Kandini, Chormara, Gurmaha, Bhimbandh, etc. All these sites appear to have been inhabited by the Mesolithic people in the course of their migration from one place to the other in search of sufficient game and other food resources.

(vii) The Mesolithic culture revealed by the excavations at Paisra appears to belong to the early Holocene. The radiocarbon date of a charcoal sample collected from the refuse pit is 7420 ± 110 B.P., which places it in the middle of the 6th millennium B.C. Incidentally, to the best of our knowledge, it happens to be the only radiocarbon date of the Mesolithic phase in the entire eastern India.

9

Epilogue

The foregoing account provides a detailed view of various types of evidence unearthed from various localities of Paisra. It enables us to appreciate the importance of this Stone Age settlement in the Indian as well as world perspective.

Although the evidence pertaining to both Acheulian and Mesolithic settlers of Paisra is significant, it is the former which catches the eye more, due to the rare occurrence of Acheulian settlements not only in the Indian sub-continent but also in other parts of the world. There are two other sites in the Indian sub-continent where the investigators claimed to have unearthed evidence for habitational structures. The first site is Chirki-Nevasa meticulously excavated and analysed by Gudrun Corvinus in the late sixties (Corvinus G. 1967, 216-218). Corvinus is reported to have found indications of an Acheulian settlement including a suspected wind-screen made of boulders. While making an assesment of this evidence we should not lose sight of the fact that the site of Chirki-Nevasa is situated close to the river Pravara and must have been frequently inundated by the river during floods. Under the circumstances, what looks like an Acheulian structure might have been formed by water action. Moreover, the boulder-cobble spread of the site which has been identified as settlement area, is actually part of a deposit referred to in the literature as gravel I (Sankalia 1974), found in the vicinity as well as other parts of the Pravara basin. In view of these observations it appears more appropriate to describe the site as one where the first gravel has undergone severe erosion. The hypothesis of its being a settlement of the Acheulians with the evidence of wind-screen should be regarded as unproved.

The other site where some evidence of Acheulian habitation has been claimed is Hunsgi, excavated by Paddayya (Paddayya K. 1982). Here the investigator found an alignment of blocks of stones part of which was man-made. Some typical Acheulian implements were also found associated with this structure, interpreted as some sort of a protective devise.

However, this lone structure of the site was partly visible on the surface, and the number of associated implements is also not very large. Under the circumstances it is only reasonable to conclude that if Hunsgi was at all inhabited by the Acheulians, it must have been a very small group of occupants. The evidence also suggests that shelter making was not an important feature of the Acheulian settlers of Hunsgi.

Besides the above the cultural remains of the Acheulians have also been unearthed from at least three rock-shelter sites namely, Adamgarh and Bhimbetka in Madhya Pradesh (Wakankar V.S. 1973: 23-32 and Mishra V.N. 19) and Gudiyam in Tamil Nadu *(Indian Archaeology A Review* 1963-64 : 19). However, none of these sites has yielded actual evidence of habitation in the form of working and or habitational floors. The tools have been found distributed in the entire thickness of the deposit. Furthermore, the Acheulian tools, so widely distributed in the Indian sub-continent, have probably been dislodged from habitational areas, since they occur either on surface or in geological deposits mostly fluvial in nature without any evidence of actual habitation.

Out side the Indian sub-continent, habitational floors with or without structural remains of the Acheulians, have been reported from some sites of Europe and Africa. Acheulian huts with internal hearths have been seen at Terra Amata (de Lumley H & Y. Boone, 1976) and Lazaret (de Lumley H. 1969) in southern France, both in the vicinity of Nice. At the former site, assignable to the Mindel, the hut is indicated by a series of post-holes, while at Lazaret the Acheulian hut or dwelling was located within a cave, the outer limit of which was marked by alignments of stones. The site of Latamne in northern Syria has yielded a number of lime stone blocks in alignments, sometimes in groups of 3 to 5 close together. Though the available evidence suggests that the lime stone blocks were placed at various places in lines by human groups, yet its interpretation does not seem easy. A comparison with the deserted camp site of modern nomads suggests that the block of stones were placed to hold down wind-breaks or tent covers. It is difficult to say as to what extent this interpretation of the evidence holds good with reference to the site of Latamne particularly in view of the non-availability of enough faunal remains (Clark J.D. 1966). But, the structural remains of this site as reported by Clark and others apparently show close resemblance to the evidence unearthed at Paisra. There are at least two other sites in Europe namely Pech de L'Aze (Dordogne) and Orgnac III (Ardecheg) (Combier J. 1967) where stone hearth and hearth surrounded by stones and earth respectively have been unearthed. Both these Acheulian sites are assignable to the Riss glaciation.

Similarly, stone floors of the Acheulians were revealed in the excavations of Olorgesallie (Kenya, Africa) (Isaac. G.L. 1977), Isimila (Tanzania, Africa) (Howell F.C. et.al. 1962) and Hoxne (Suffolk, England) (Wymer J.J. 1977; 93-106). Apart from these, working floors with suspected wooden platform of the Acheulian culture were unearthed at Kalambo Falls (Zambia, Africa) (Clark J.D. 1969). Thus, even out side India there are not many Acheulian sites which have preserved evidence of any type of structural remains. This may indicate that the Acheulians generally did not settle at one particular site long enough to need shelters for their settlement. Our observation is further strengthened by the fact that these settlements are only occasionally found in cave or rock shelters. They seem to have preferred to inhabit open spaces where items of food and water were available to them.

In view of the above review of the Acheulian settlements, the evidence relating to structural remains at Paisra acquires significance. As detailed above the structural activities of Acheulians at this site were of two types—digging of post-holes and making stone alignments, both of which can be convincingly interpreted as indicative of temporary shelters. What makes Paisra unique not only in the Indian sub-continent but also in the world perspective is the fact that the evidence is not limited to only one or two structures. If all the post-holes and stone alignments spread over various localities are taken into consideration, they would form a fairly large number of shelters. Unfortunately, there is neither any substantial evidence in the form of organic remains for interpreting subsistence pattern of the Acheulians at Paisra nor their culture can be absolutely dated.

The Mesolithic settlement revealed at Paisra is not very large and is limited to only two localities. The entire evidence indicates the settlement of the true camp site, where a small group of Mesolithic people stayed for a short period. They manufactured their tools there, by making full use of fire for softening the quartzite and consumed cooked non-vegetarian food. The settlement is dated to the middle of the six millennium B.C. (7420 ± 110) by radiocarbon method which incidentally is the only date of the Mesolithic phase in the entire eastern India.

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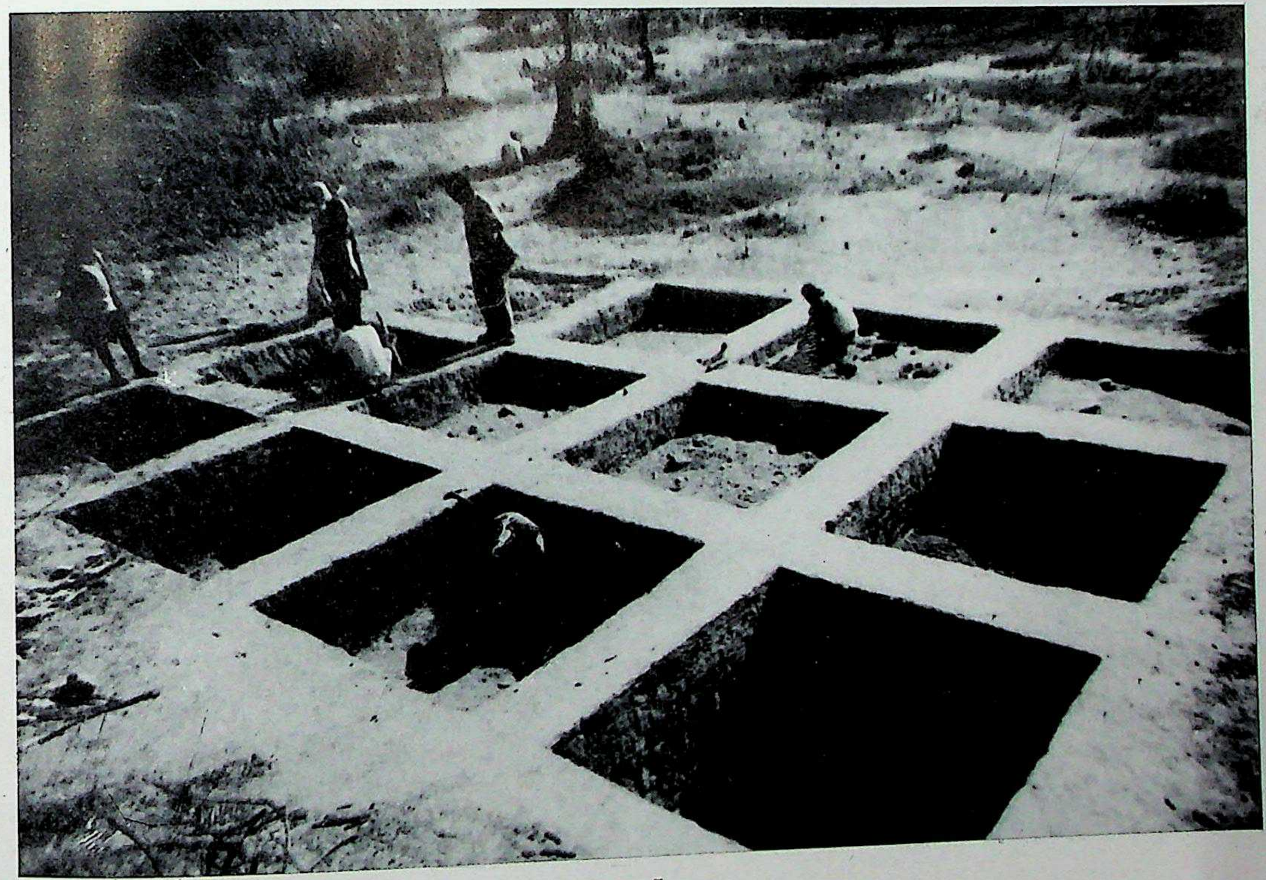

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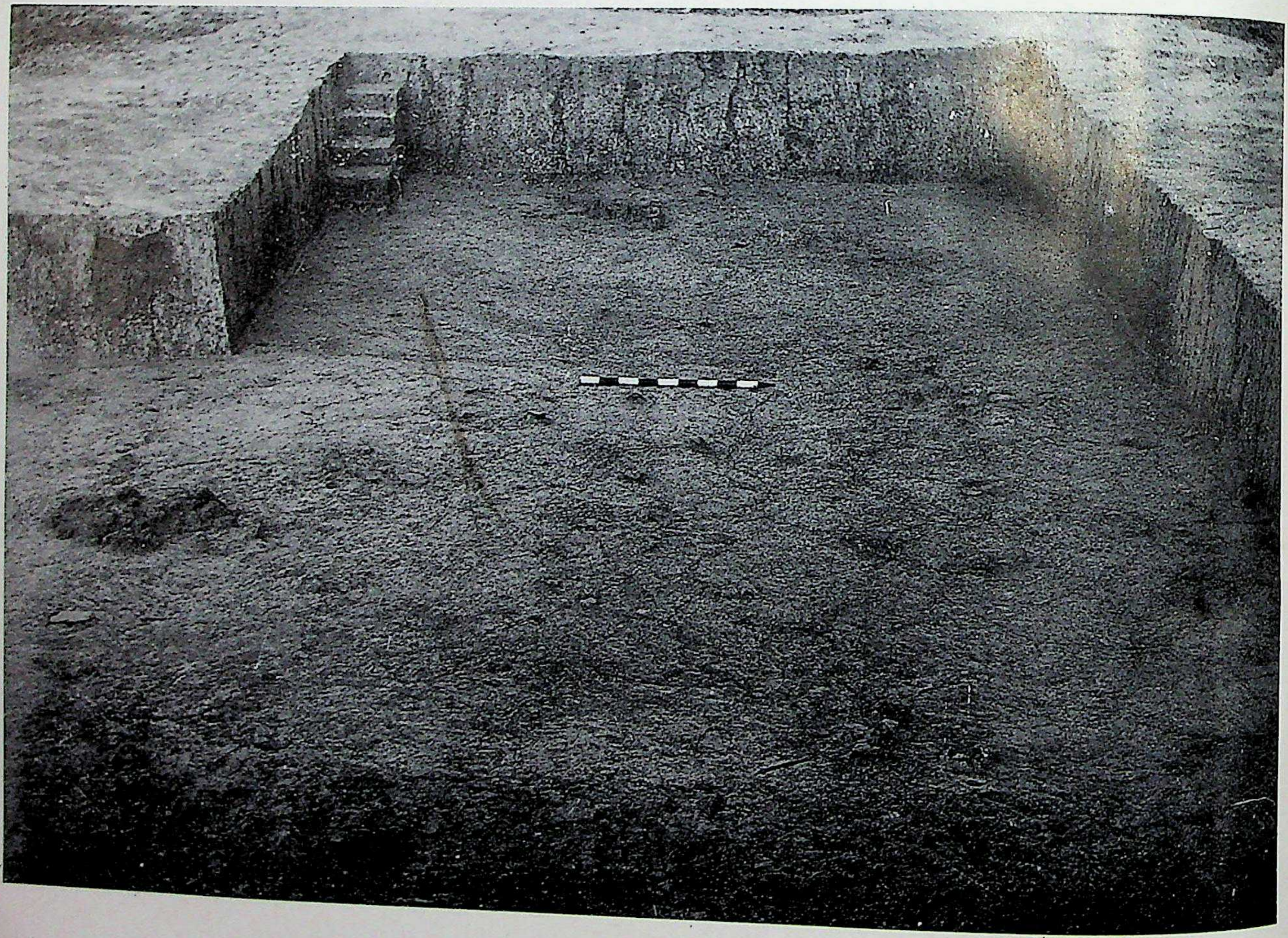

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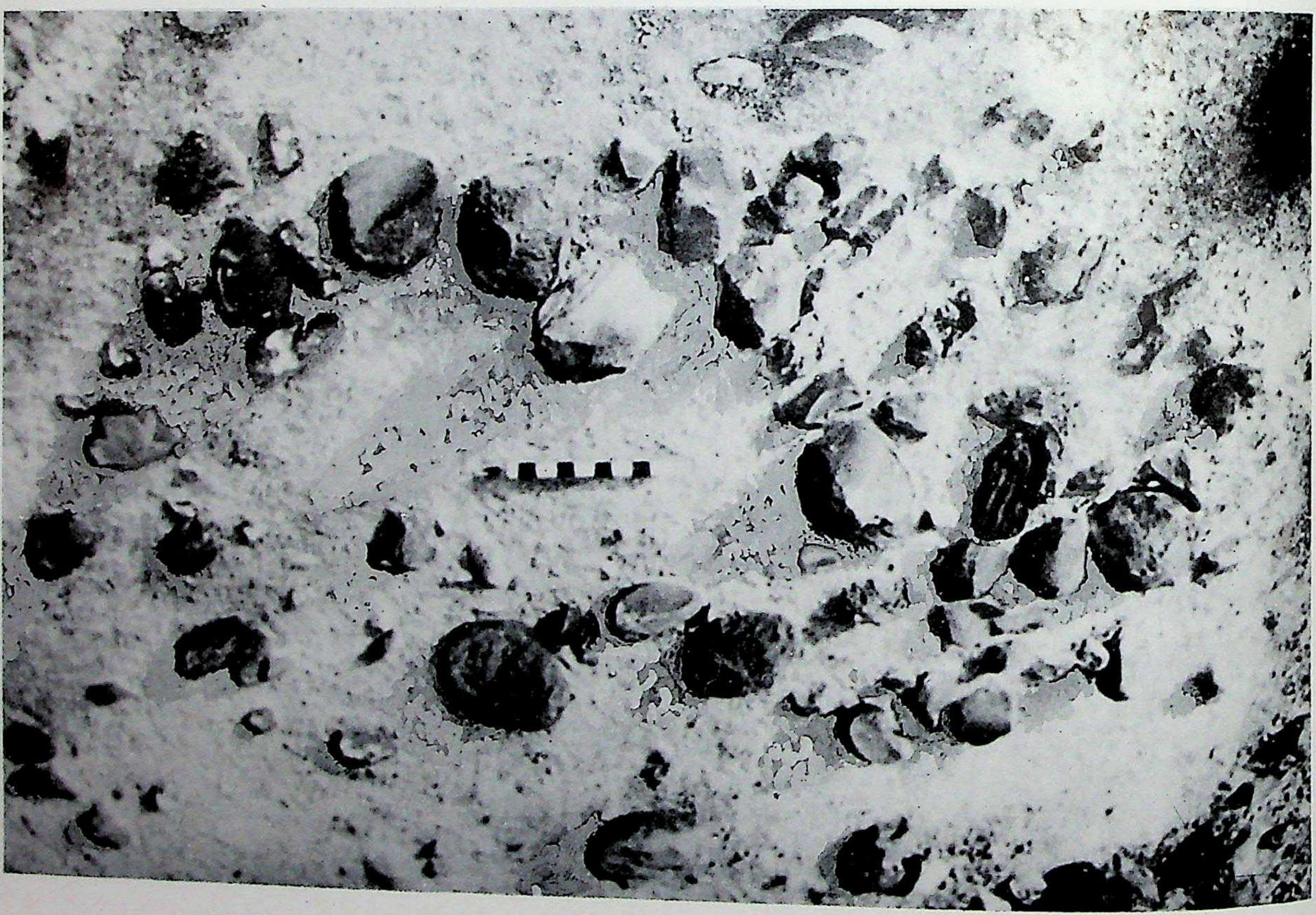

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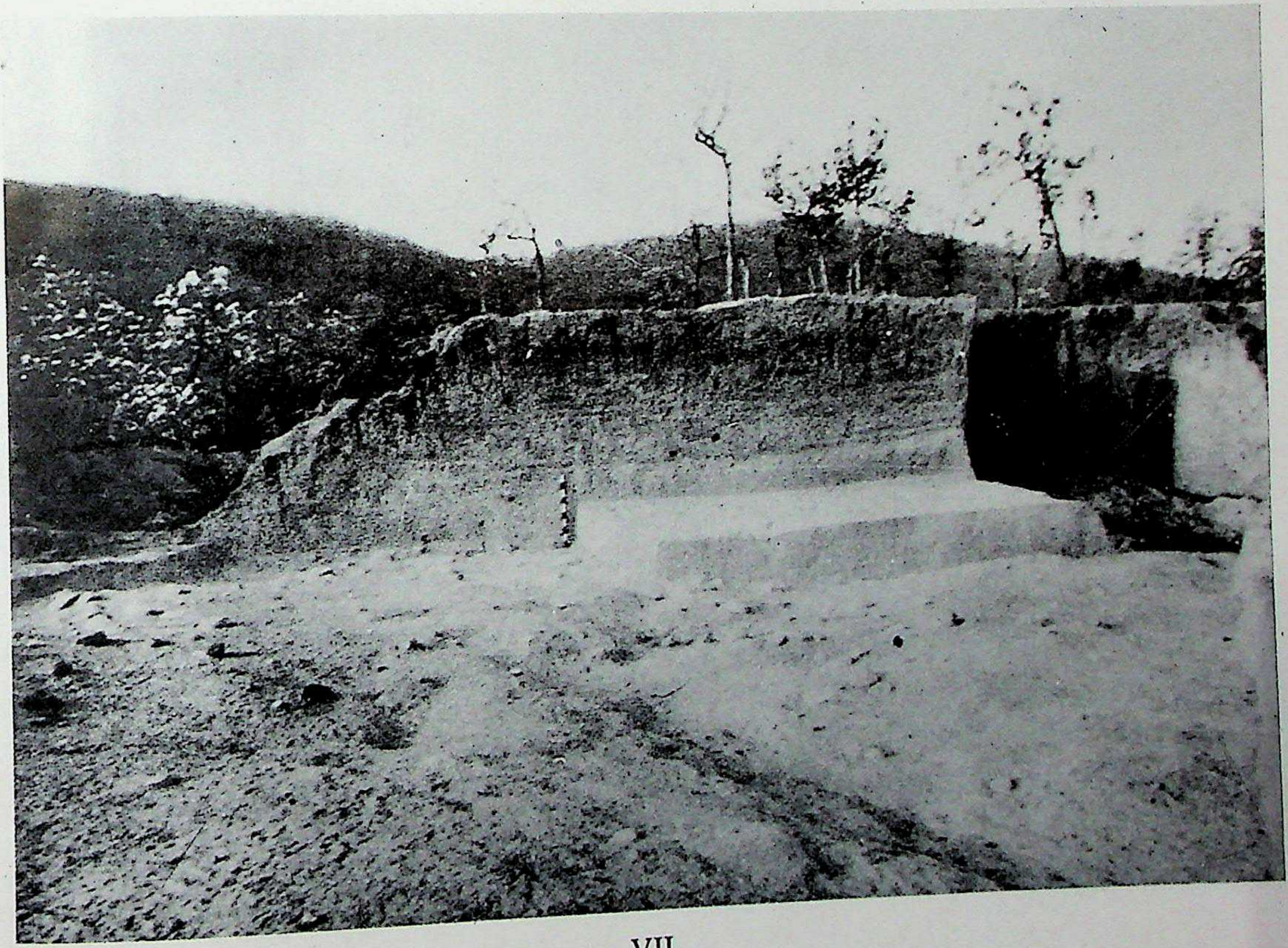
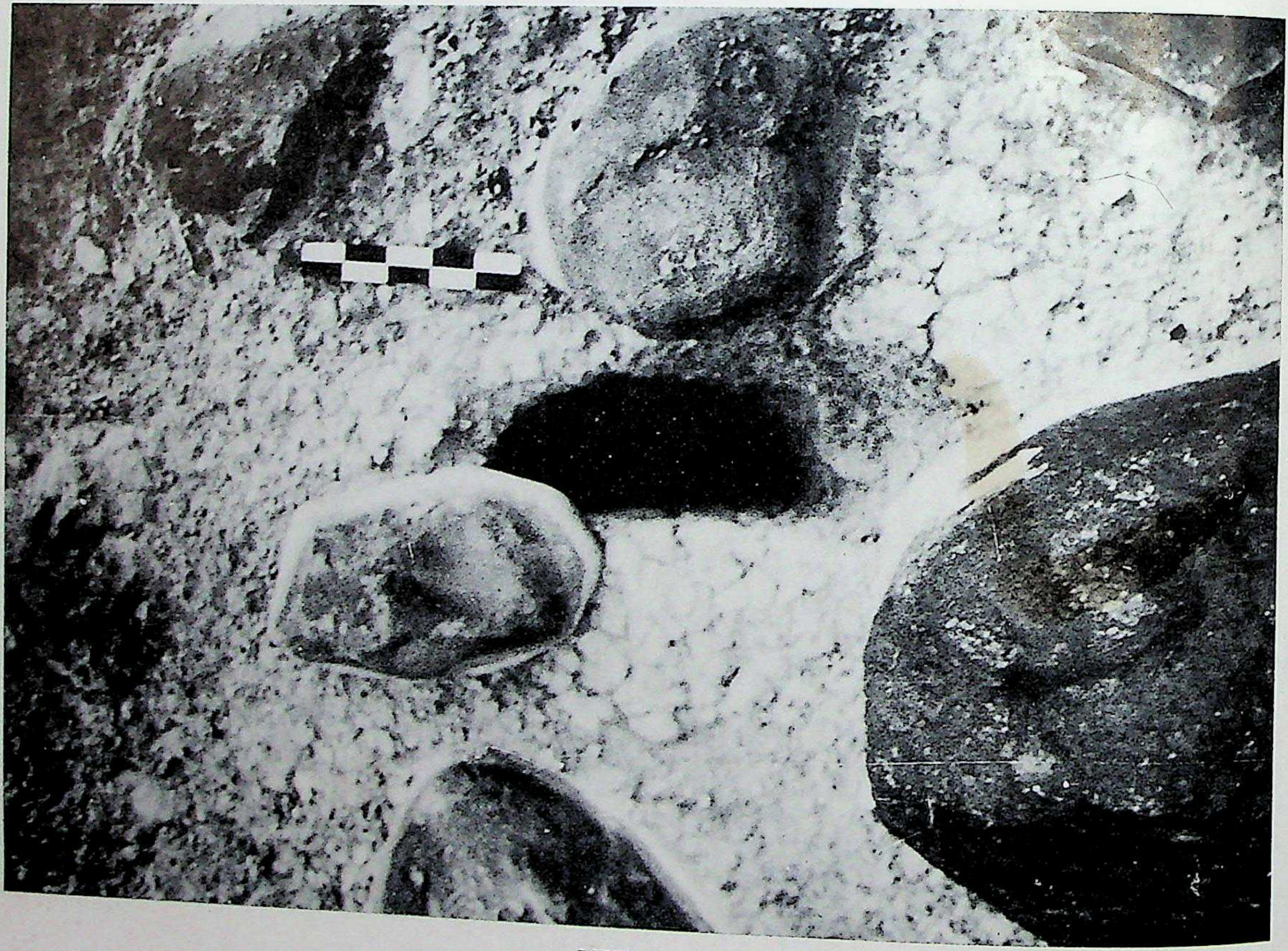


VII



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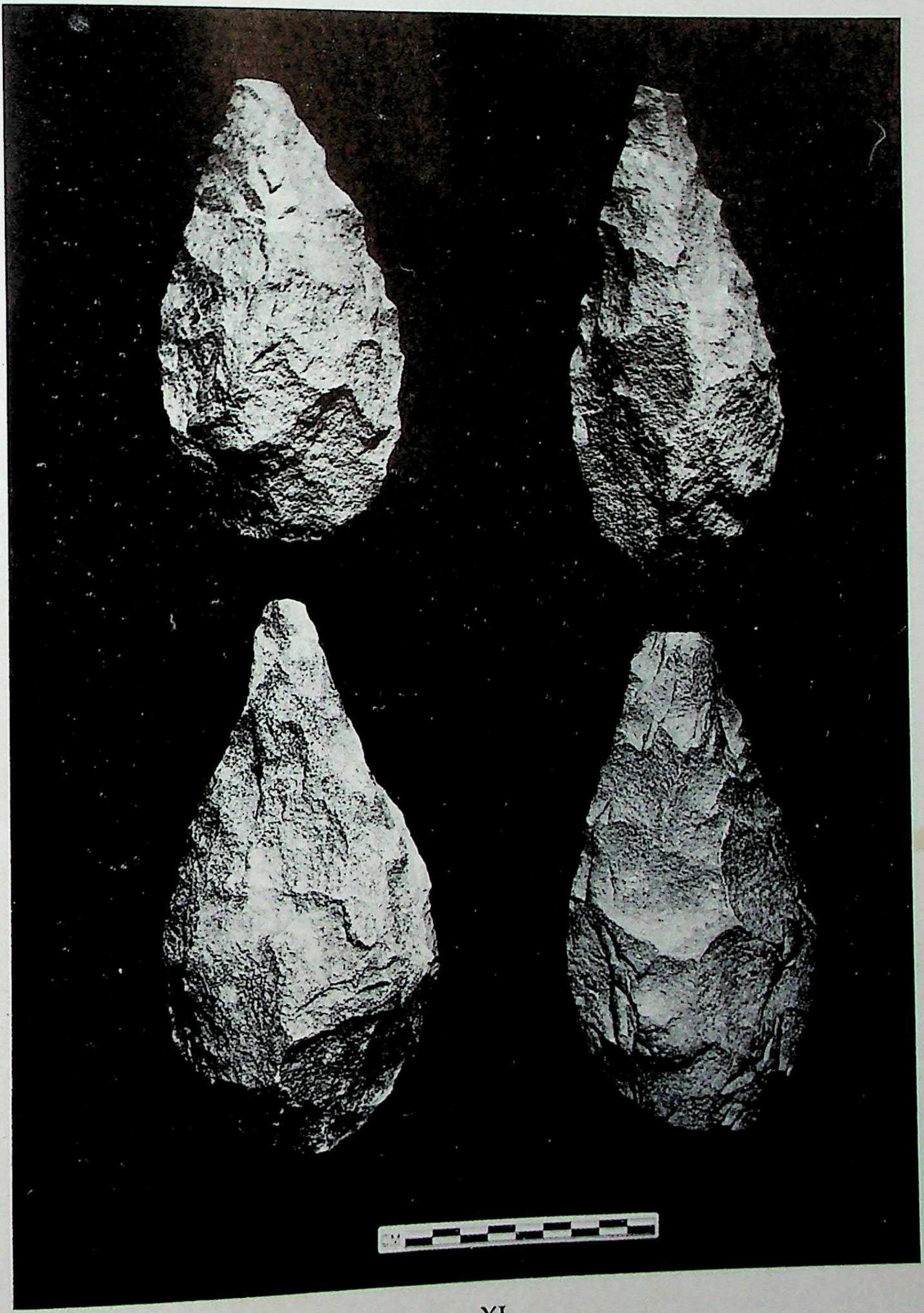

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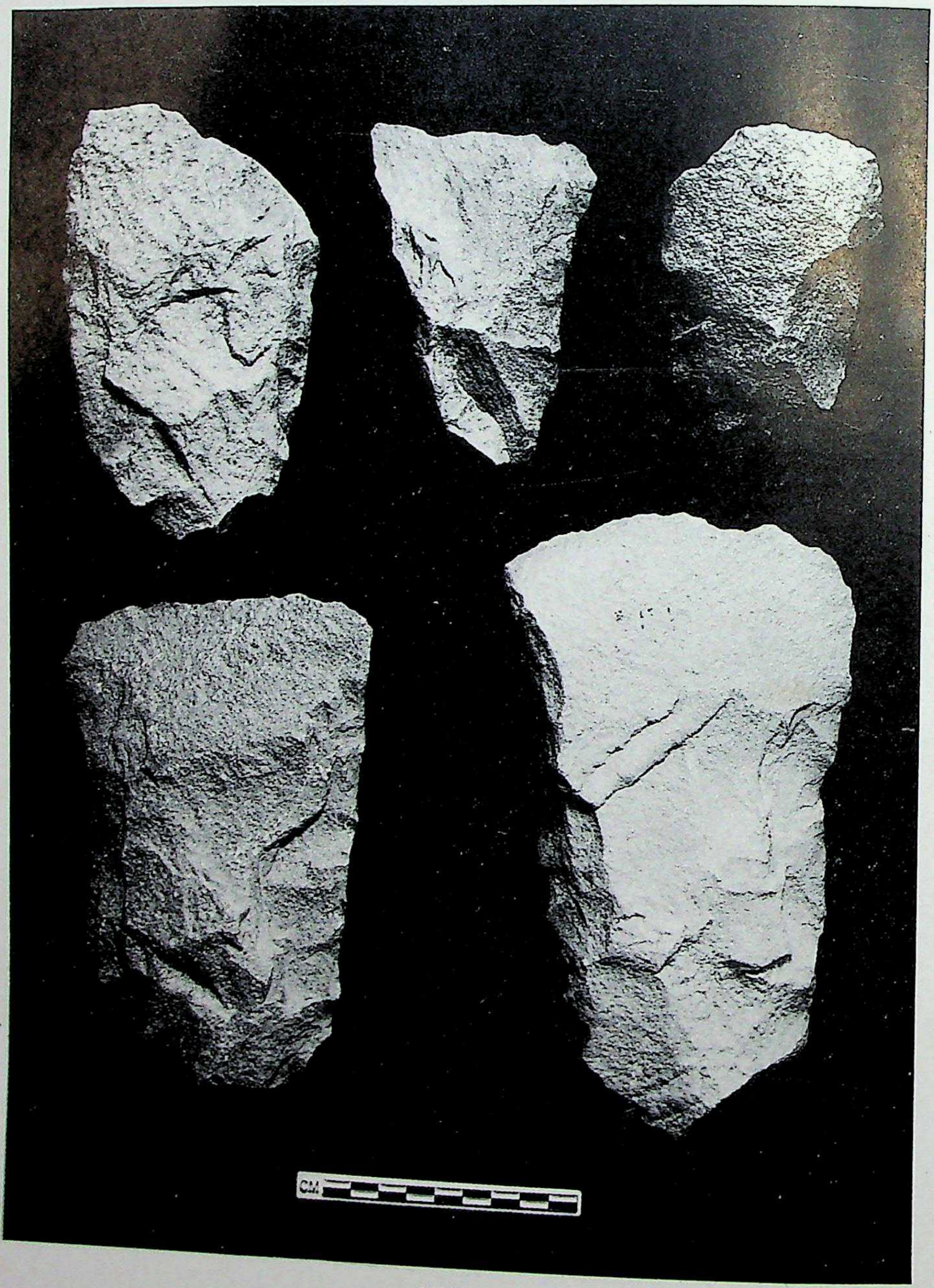

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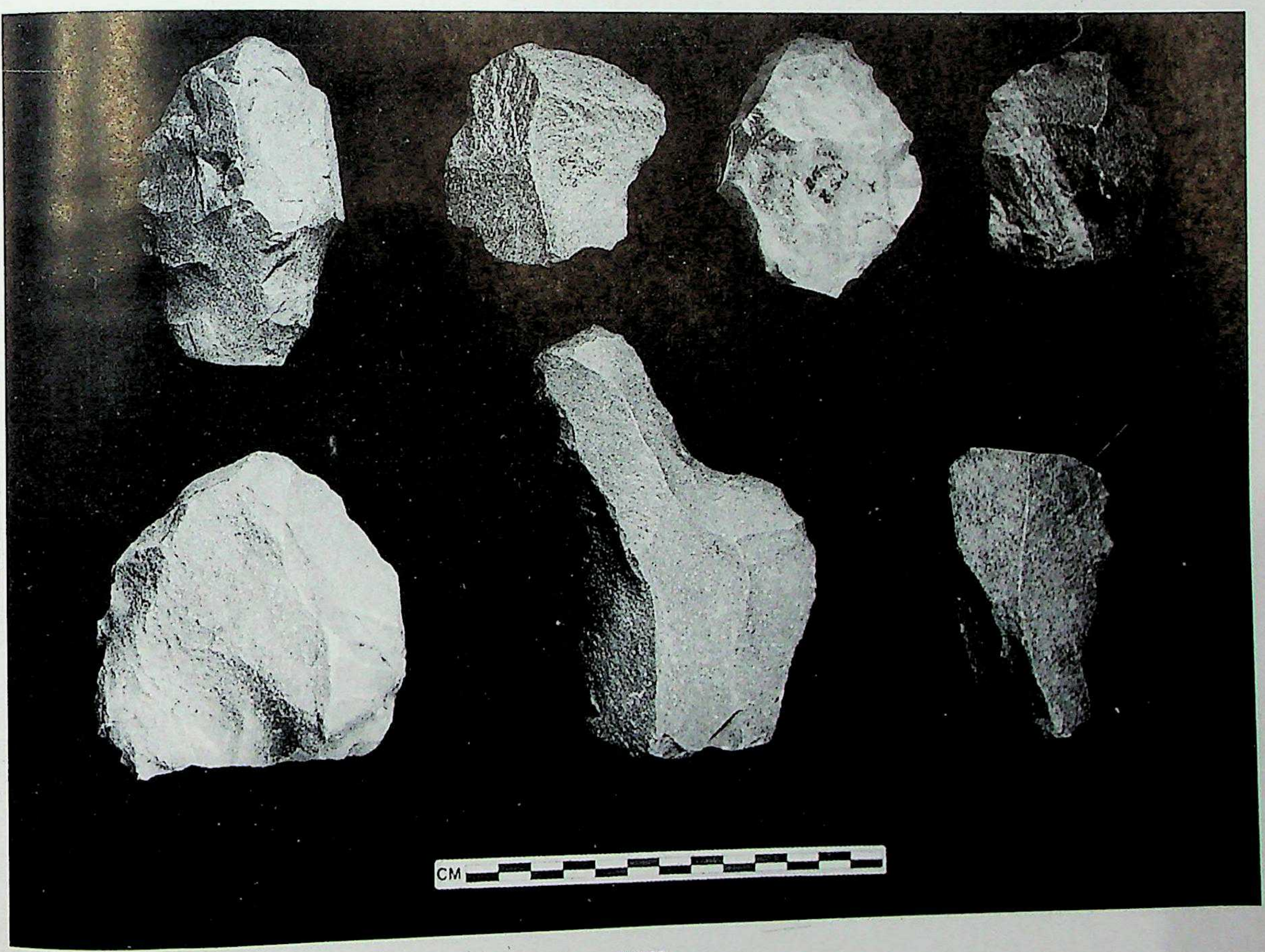

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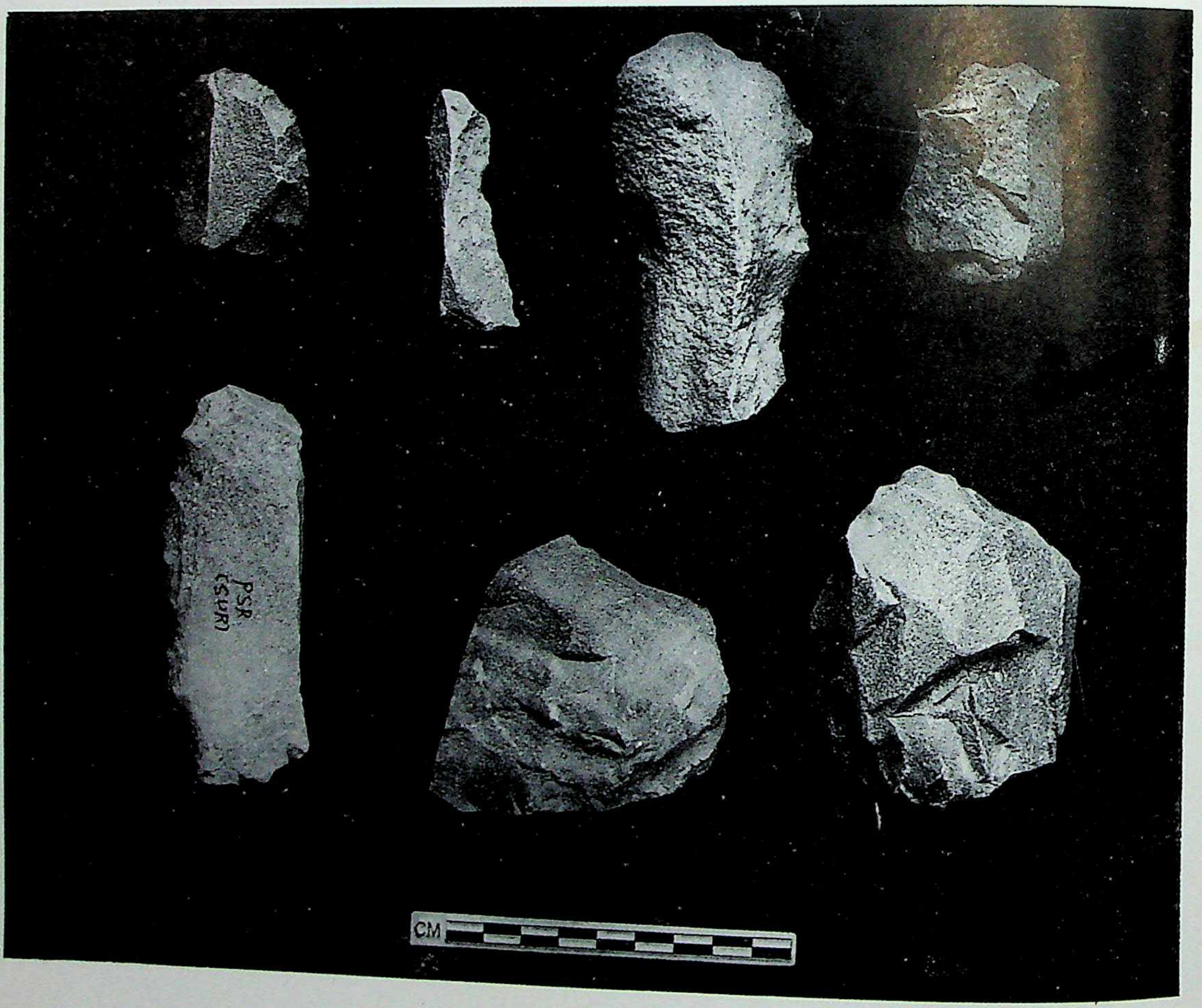

XIV

Figures
31 - 57

Fig. 31

1. Handaxe Lanceolate (Micoquian) type
(surface find from Paisra), with broken tip (compares well with La Micoque Bordes F. 1961, Pl. 51:1, 3 and 4).
2. Handaxe Lanceolate (Micoquian) type
(surface find from Paisra) with broken tip (similar to above).

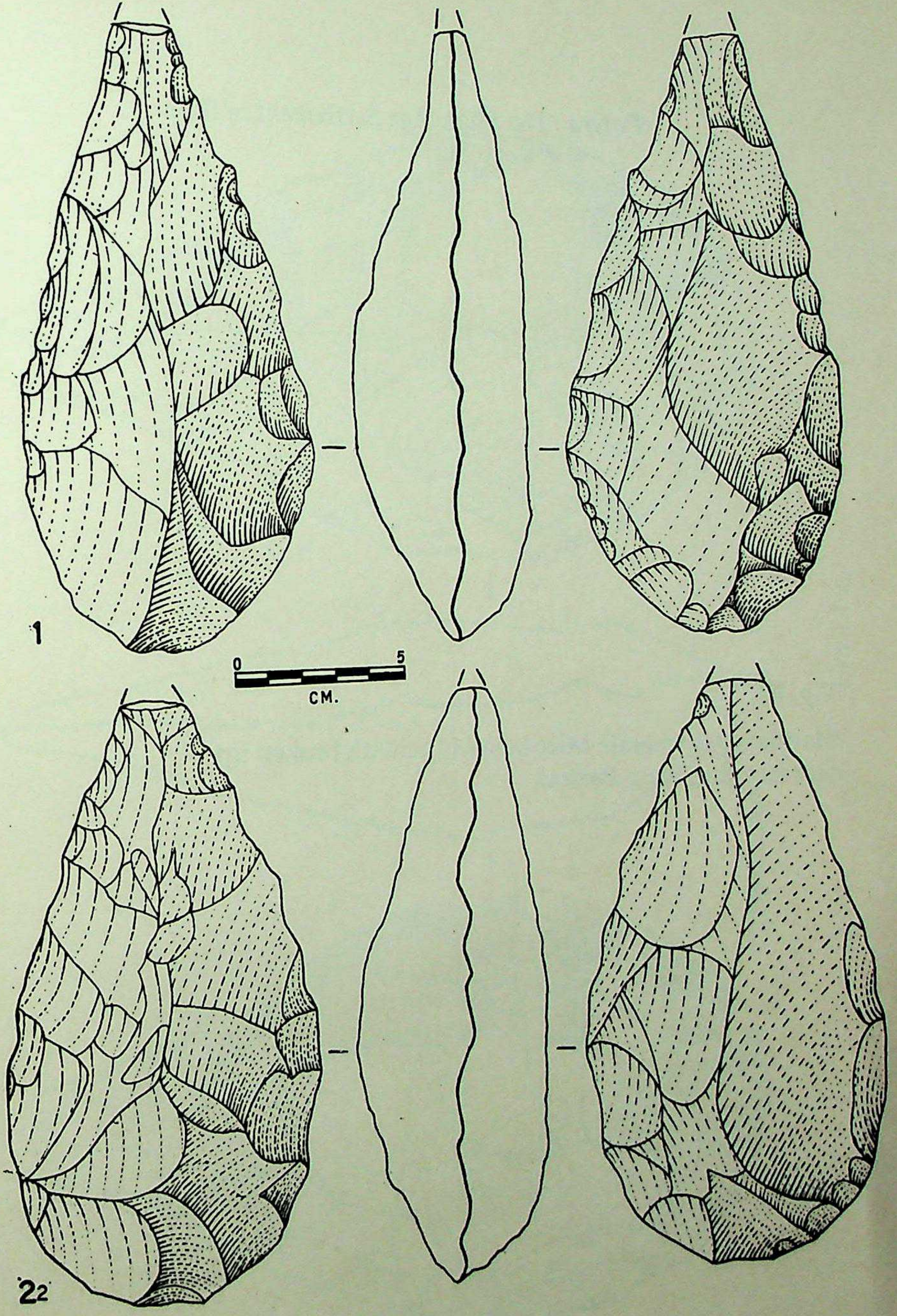

Fig. 31. Handaxes.

Fig. **32**

Handaxe Lanceolate Micoquian type with broken tip (surface find from Paisra).

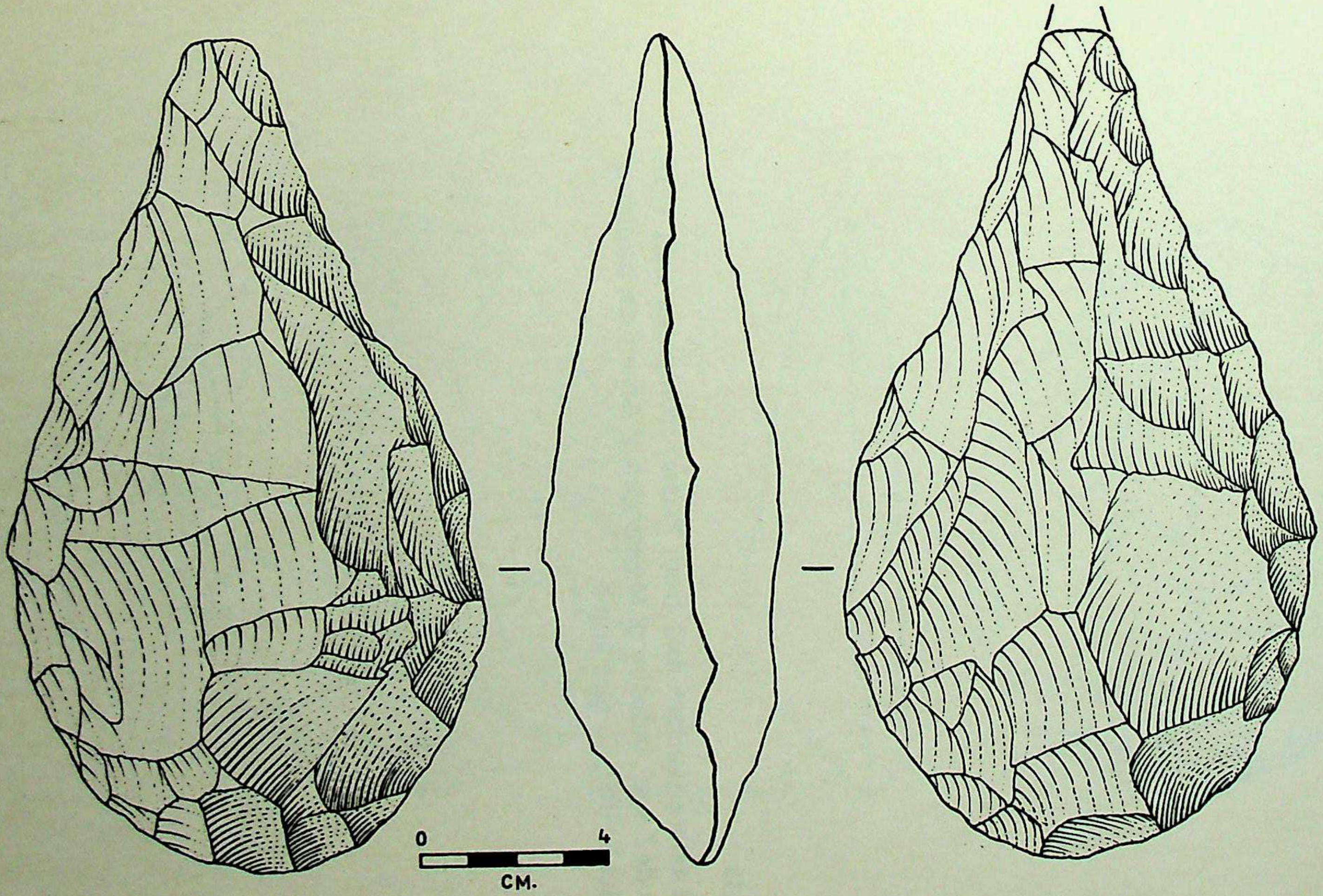

Fig. 32. Handaxe

Fig. 33

Oval biface (surface find from Paisra) (compares well with Pech de l'Age', industry of Mousterian of Acheulian tradition. Bordes F. 1961, Pl. 62:1 and 2.

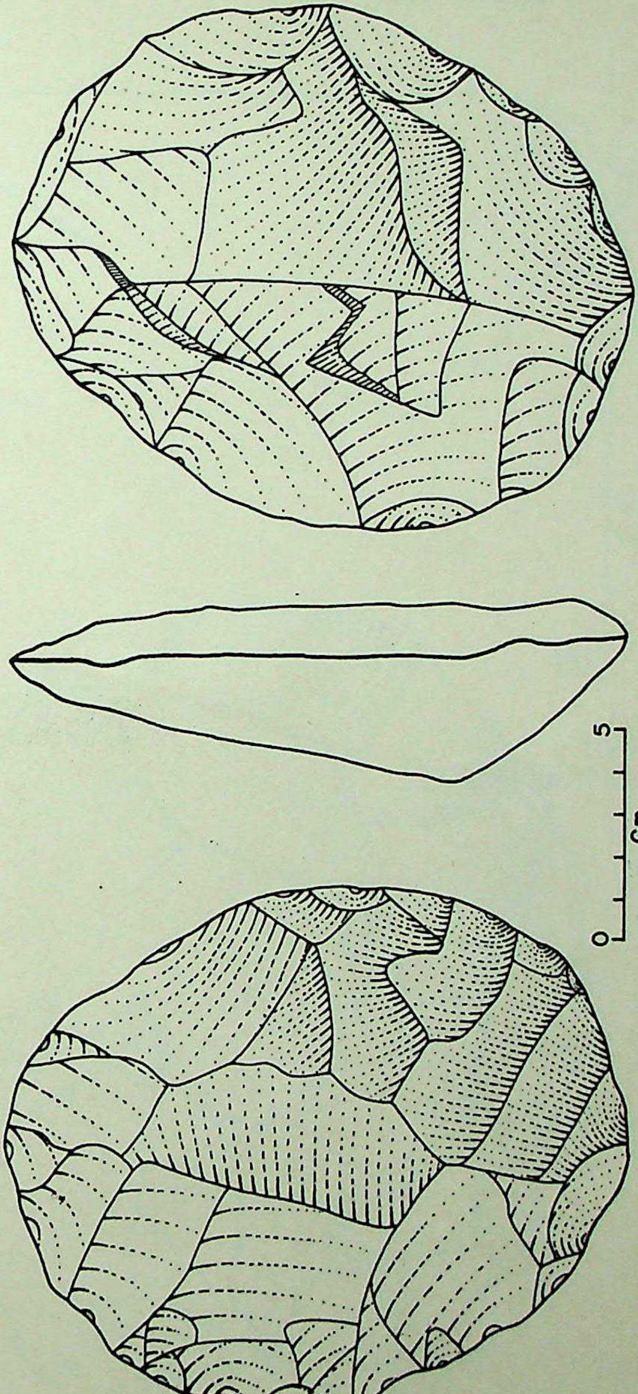

Fig. 33. Ovate

Fig. 34

Levallois Core
(surface find from Paisra).

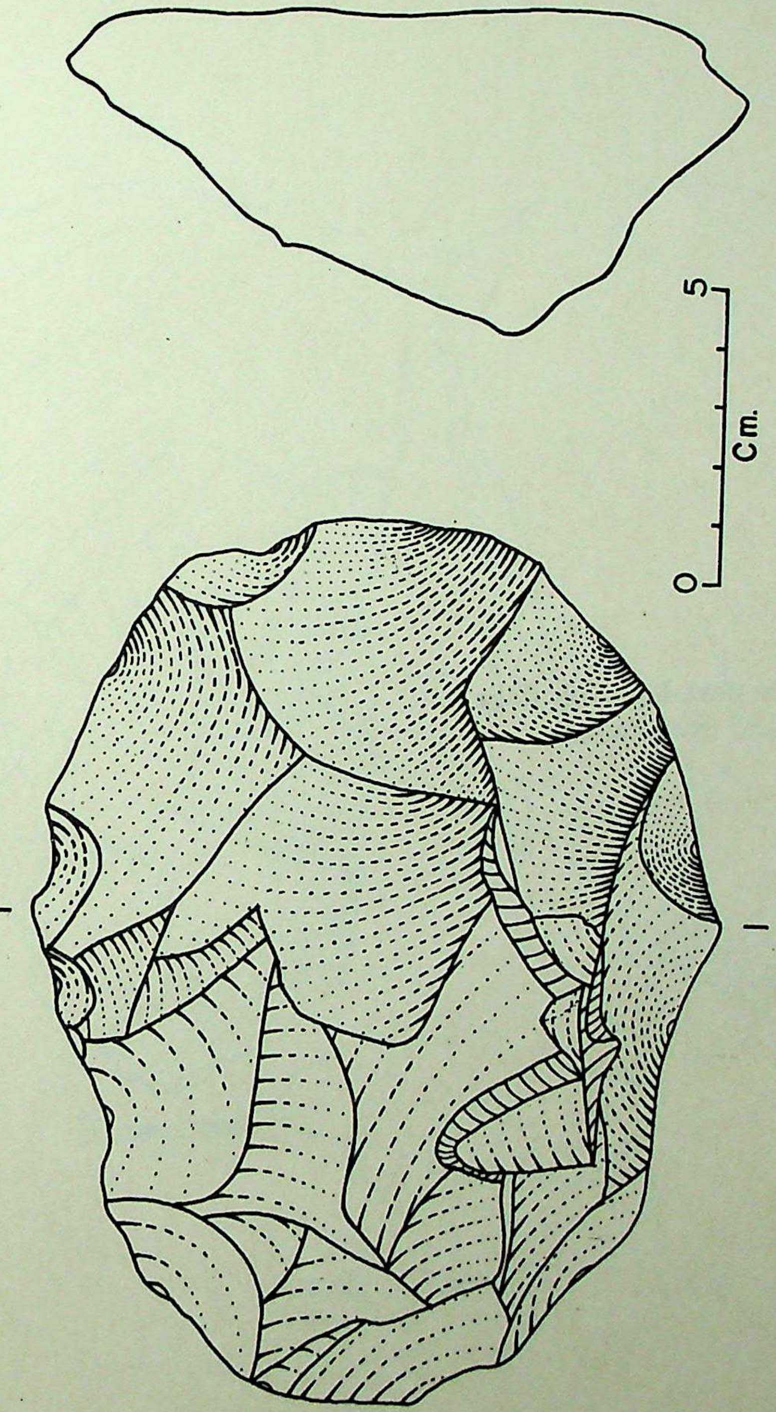

Fig. 34. Levallois core

Fig. **35**

Cleaver on para-Levallois flake
(surface find from Paisra).

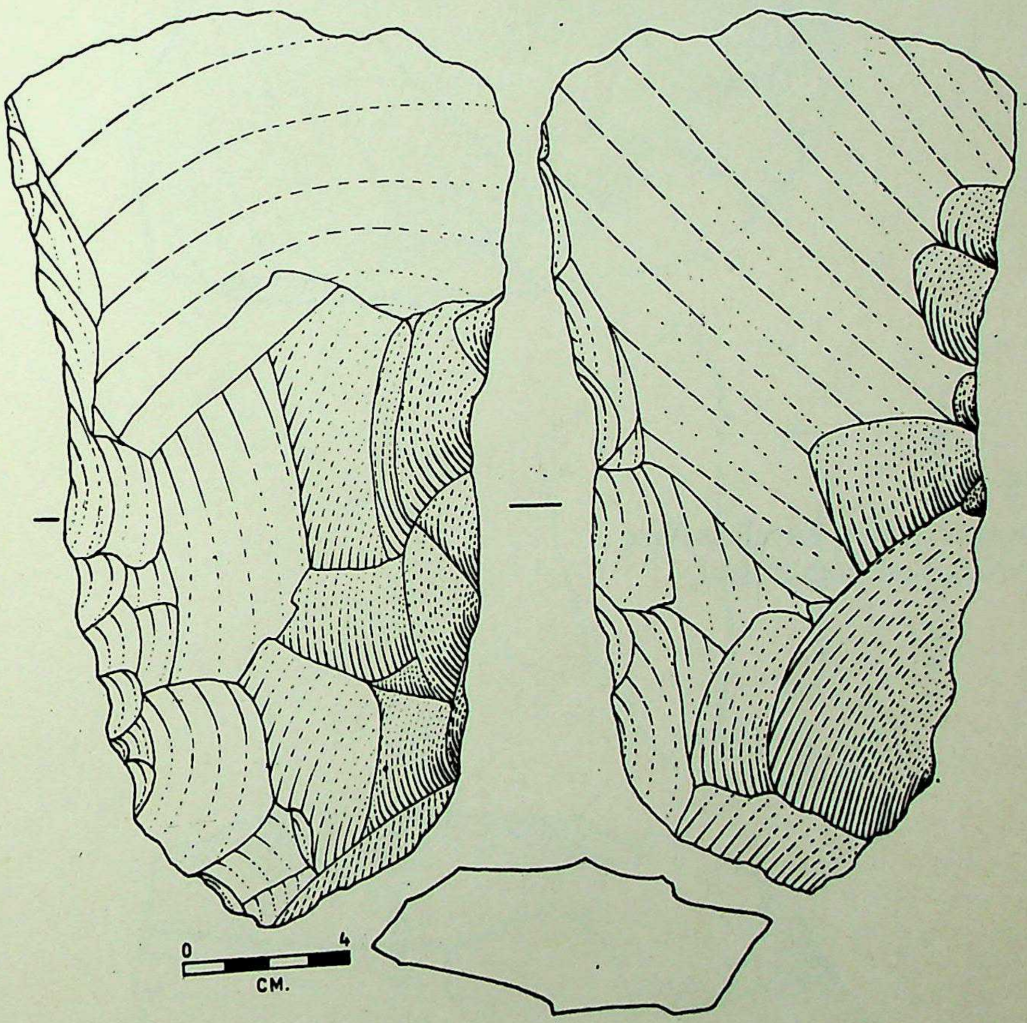

Fig. 35. Cleaver

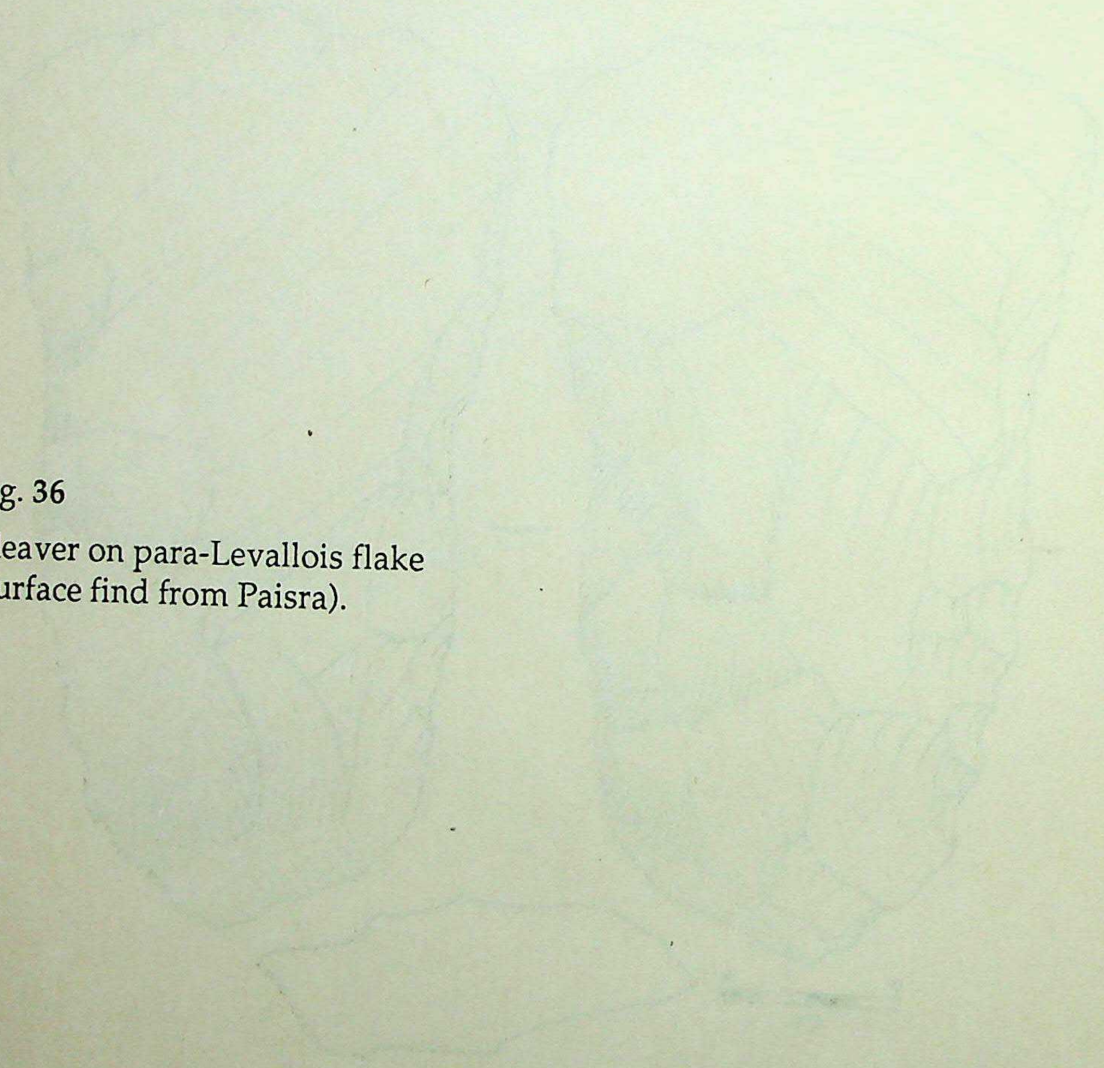

Fig. **36**

Cleaver on para-Levallois flake (surface find from Paisra).

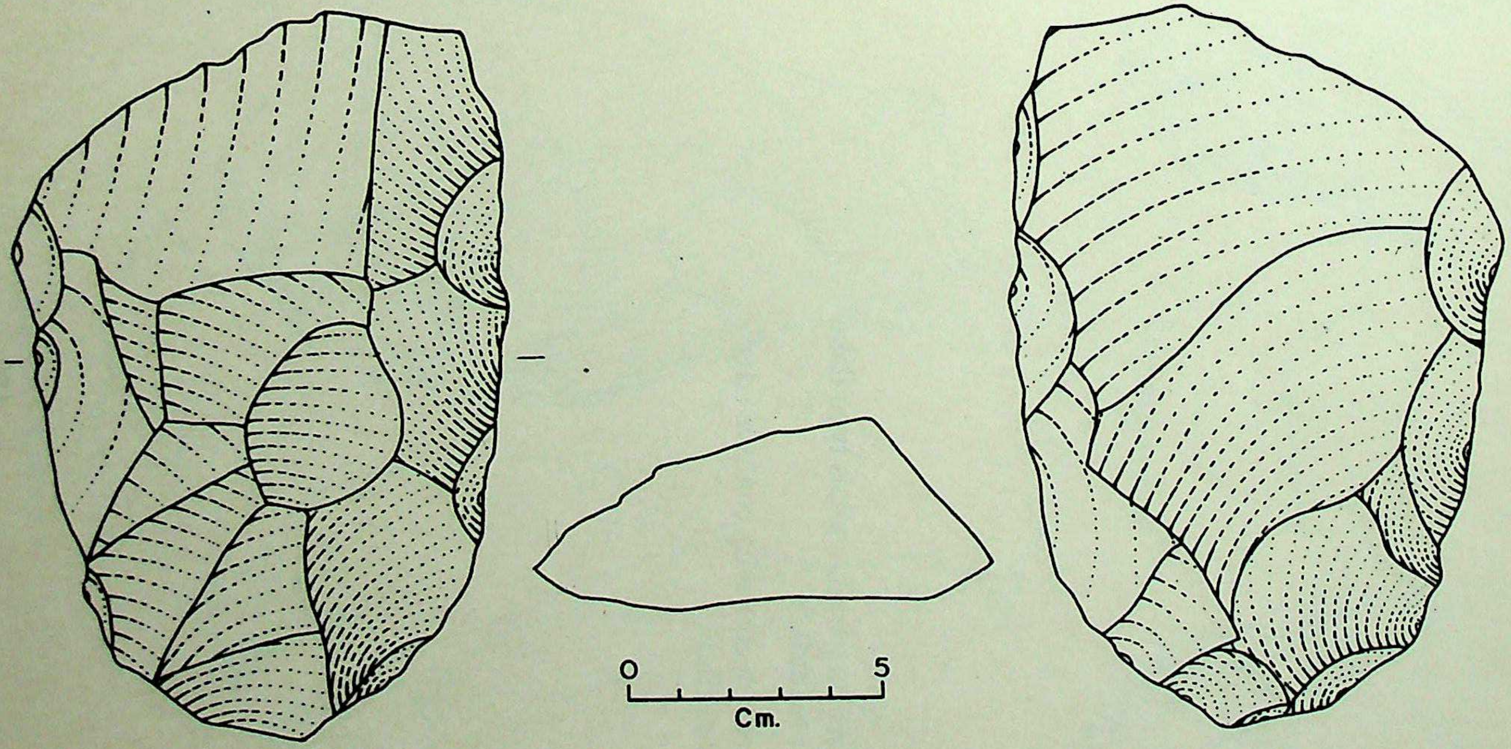

Fig. 36 Cleaver.

Fig. **37**

1. Cleaver on para-Levallois type flake (surface find).
2. Cleaver on core with concave edge (surface find).

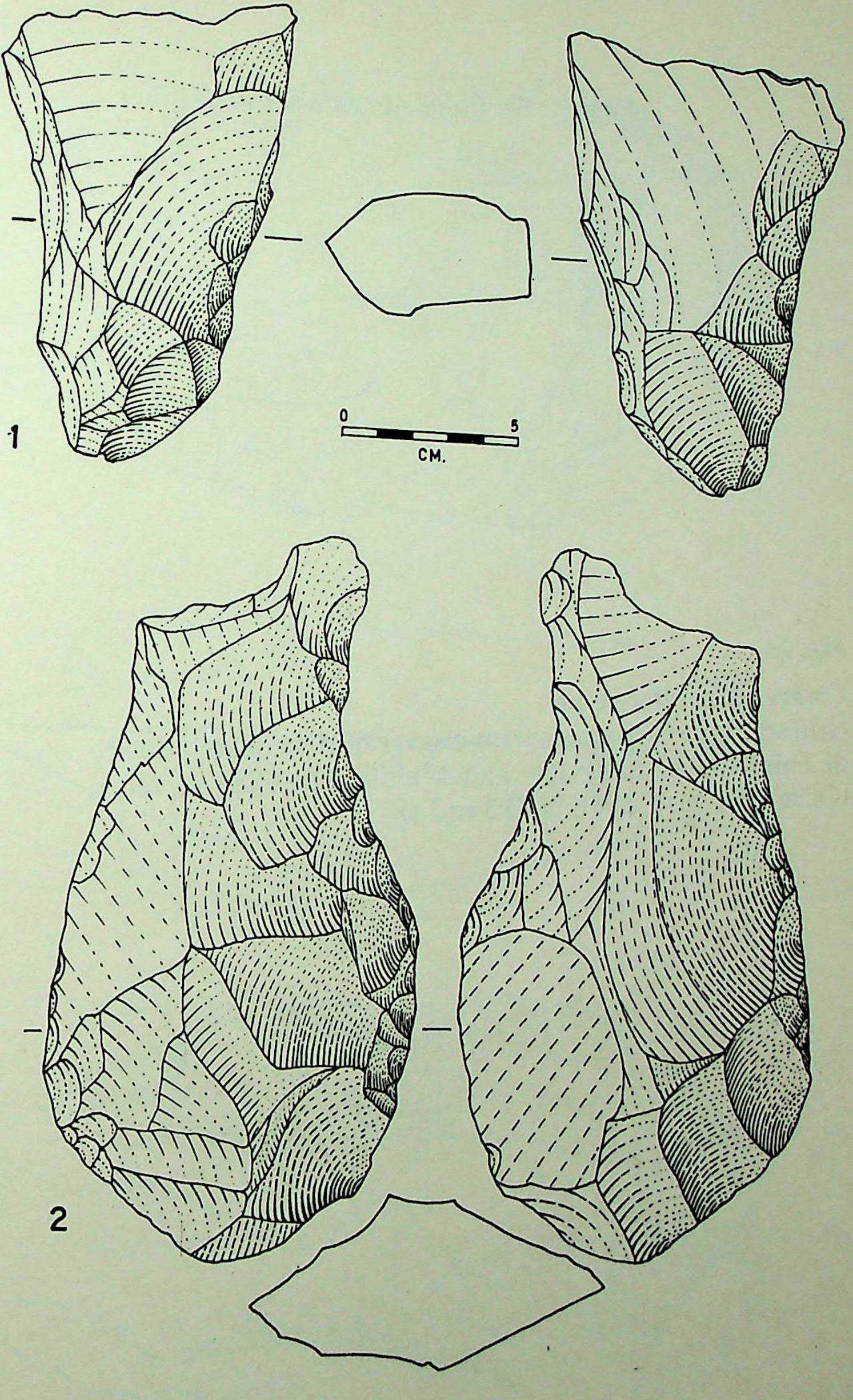

Fig. 37. Cleavers.

Fig. 38

Cleaver-core biface type
(surface find) (Compares with cleaver of Acheulian industry of Saint-Gilles, Abbeville, and Middle Acheulian of Moru (Oi'se) (Bordes F. 1961, Pl.73:3 and 4).

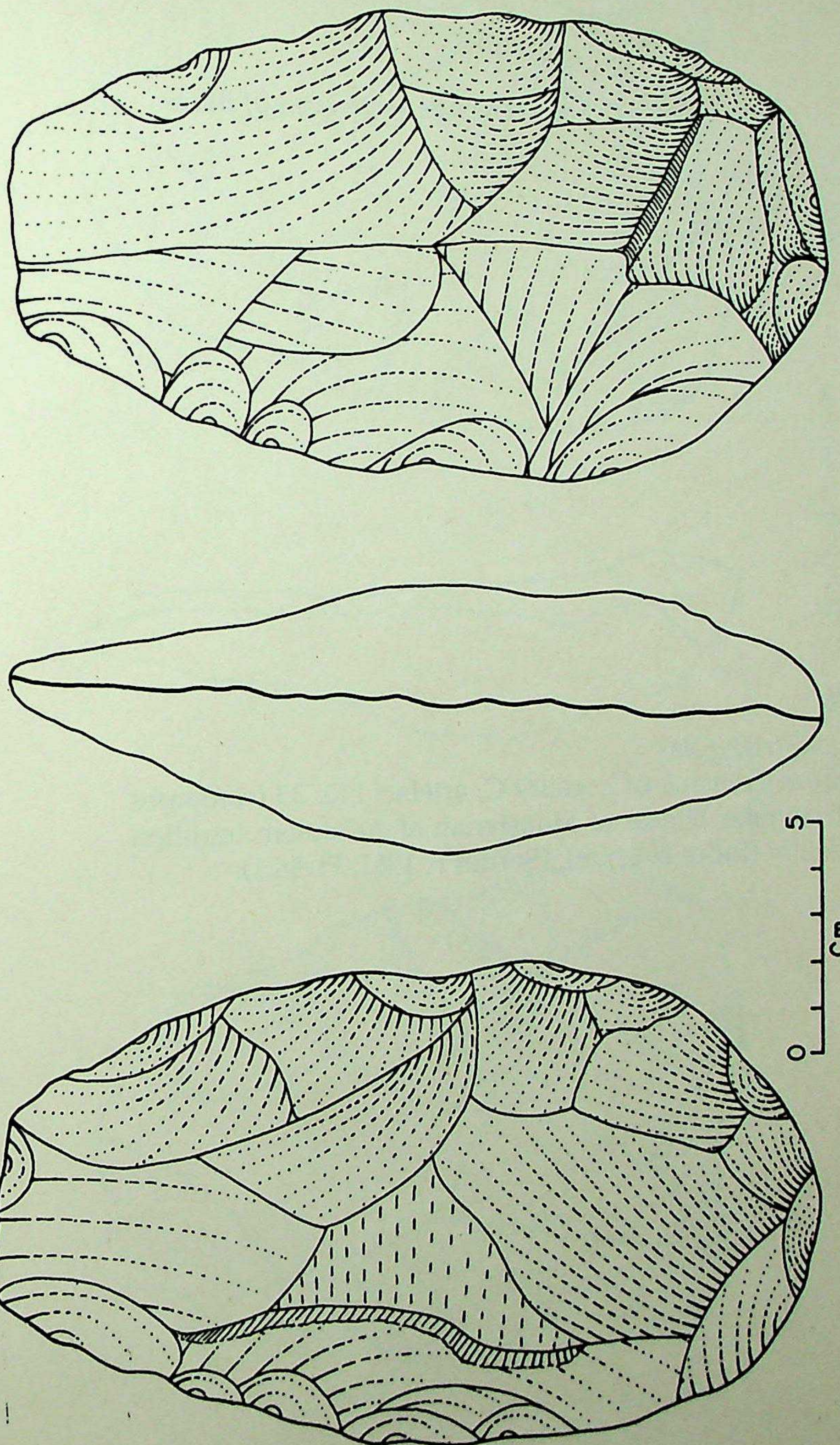

Fig. 38. Cleaver.

Fig. 39

Handaxe, triangular
(find from Trench 1 of Locality C, artefact No. 35 (compares with triangular bifaces of Mousterian of Acheulian tradition from Abilly (Indre-et-Loire), (Bordes F. 1961, Pl. 56:1).

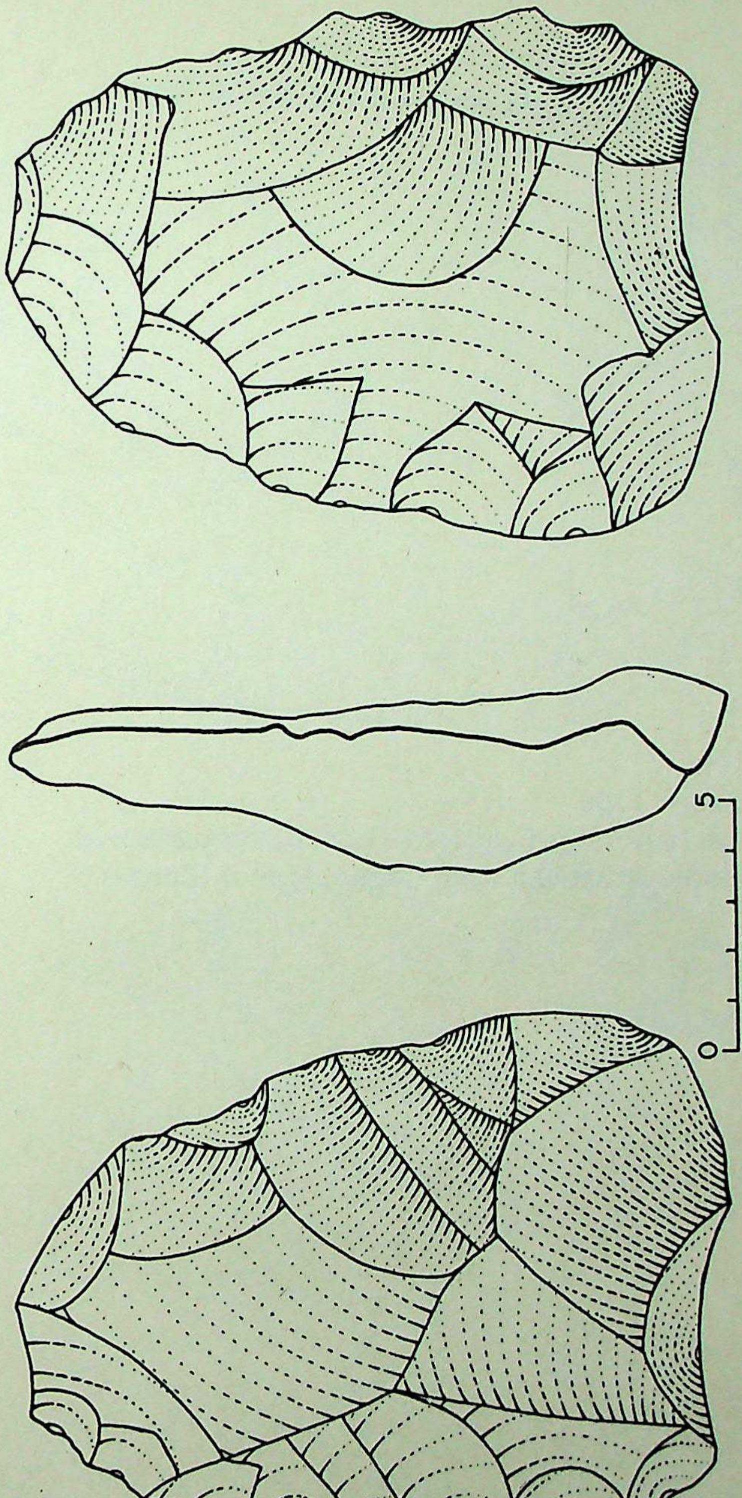

Fig. 39. Unfinished handaxe.

Fig. 40

Handaxe, Limande Type
find from trench 1 of locality C, artefact No. 576 (compares with limande of Middle Acheulian from Cagny, France (Bordes F. 1961, Pl. 65:1)

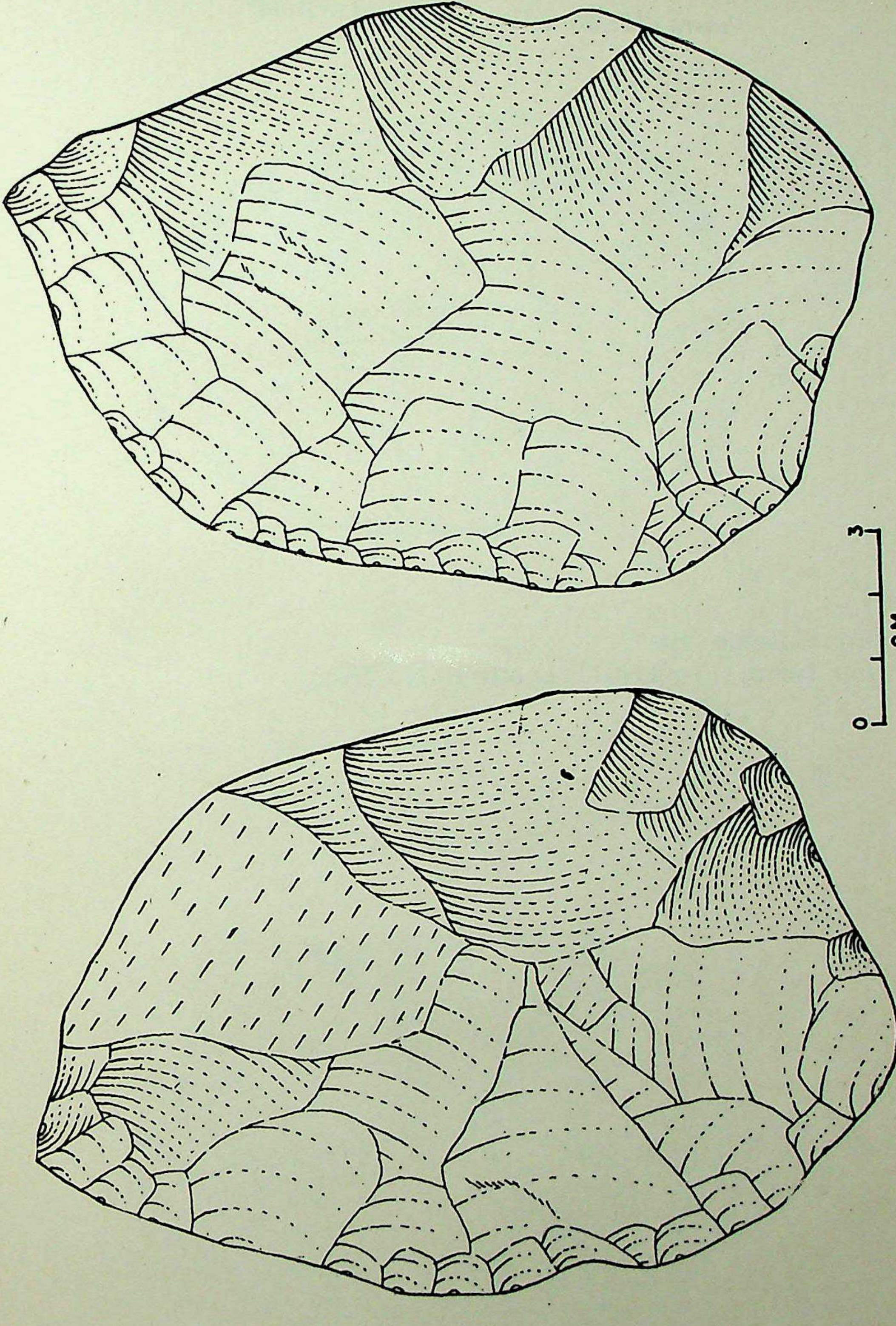

Fig. 40. Handaxe.

Fig. 41

Handaxe, Limande Type
find from Trench C 3 of Locality D, artefact No. 47.

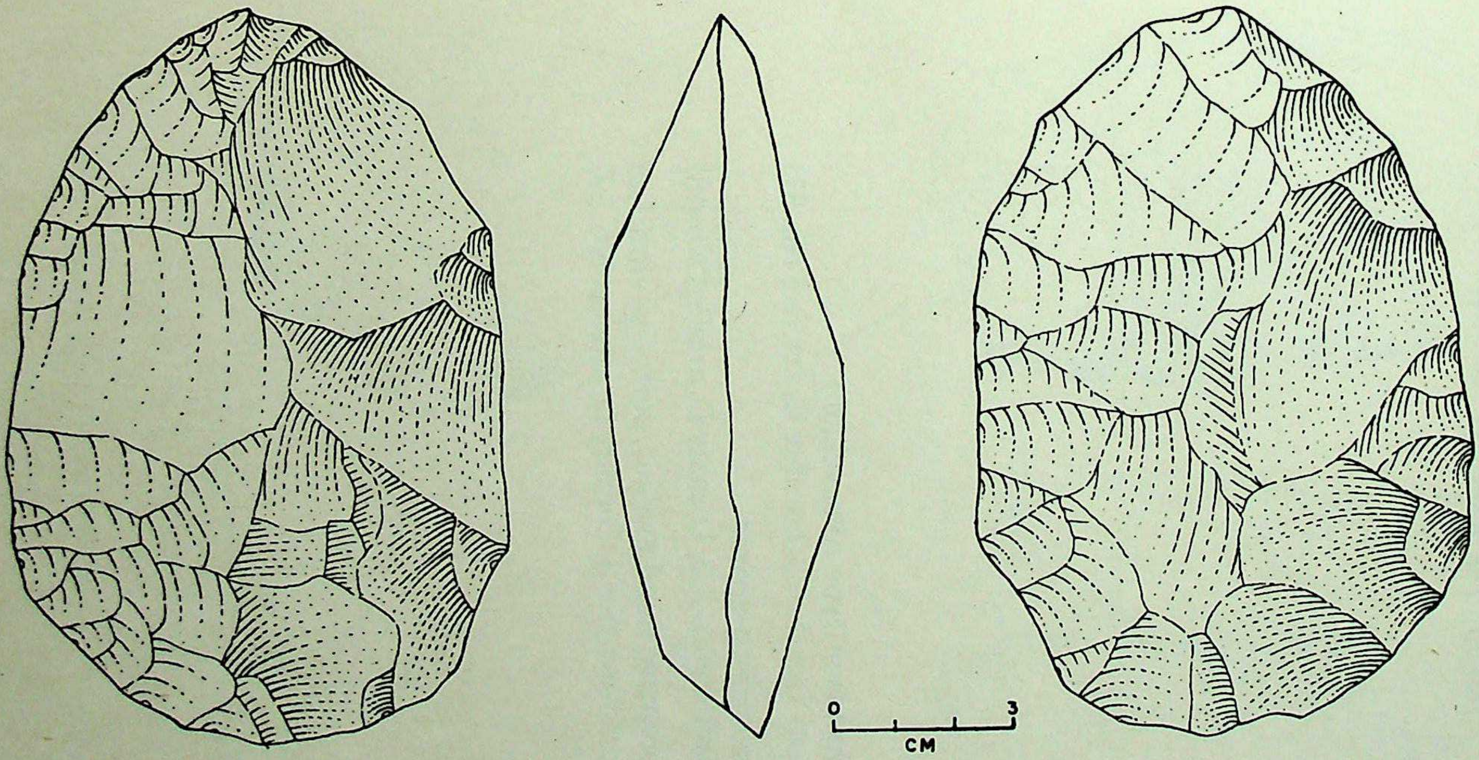

Fig. 41. Handaxe.

Fig. 42

1. Crude handaxe (type Abbevellian)
   (find from Trench A 3, Locality D, artefact No. 31).
2. Flake, partially prepared
   (find from Trench A 3, Locality D, artefact No. 18).
3. Flake, prepared non-Levallois, partially retouched
   (find from Trench A 3, Locality D, artefact No. 39).

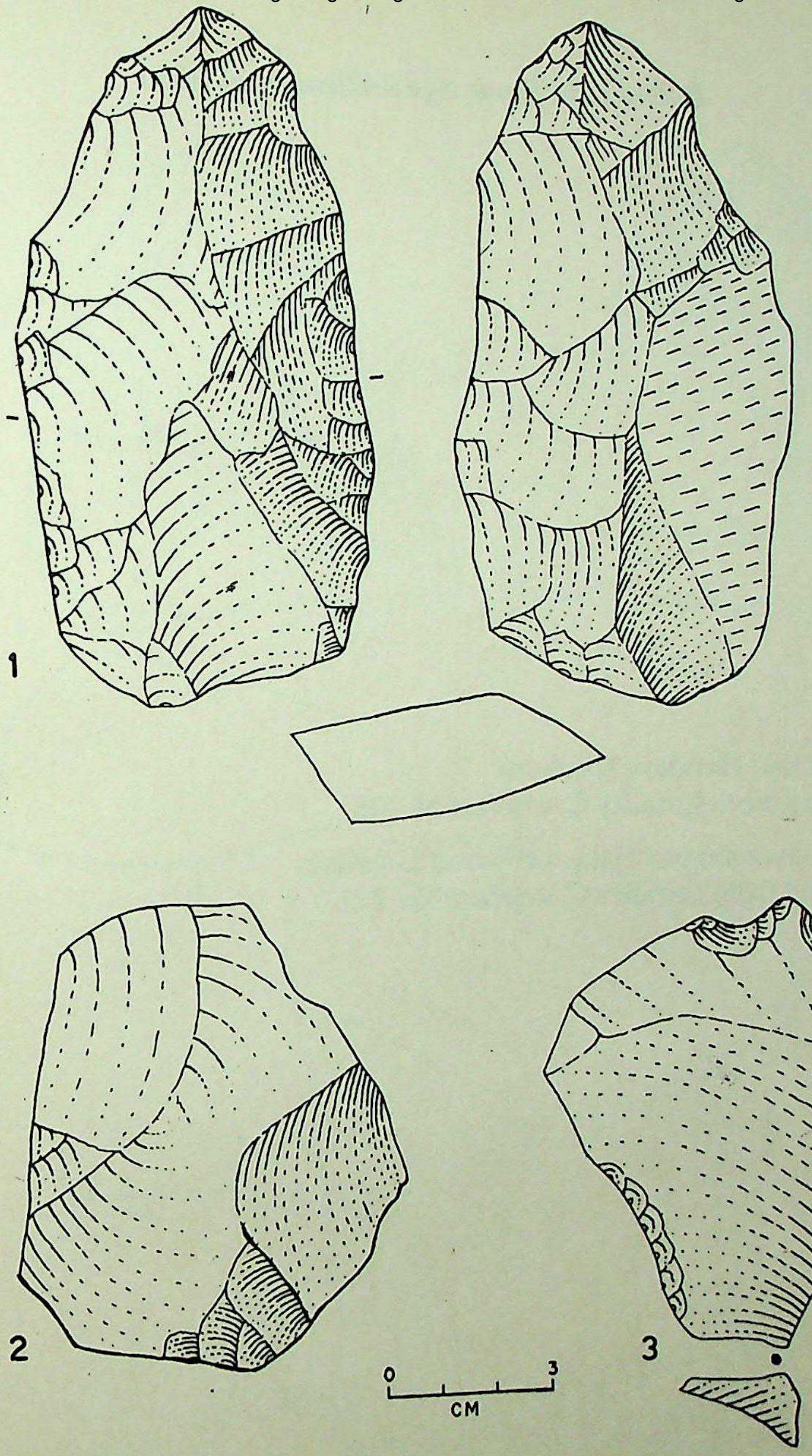

Fig. 42. Biface & flakes.

Fig. 43

1. Backed Handaxe (Broken)
   (find from Locality C, artefact No. 38
2. Cleaver shaped flake, prepared Levallois
   (find from Locality C, artefact No. 222

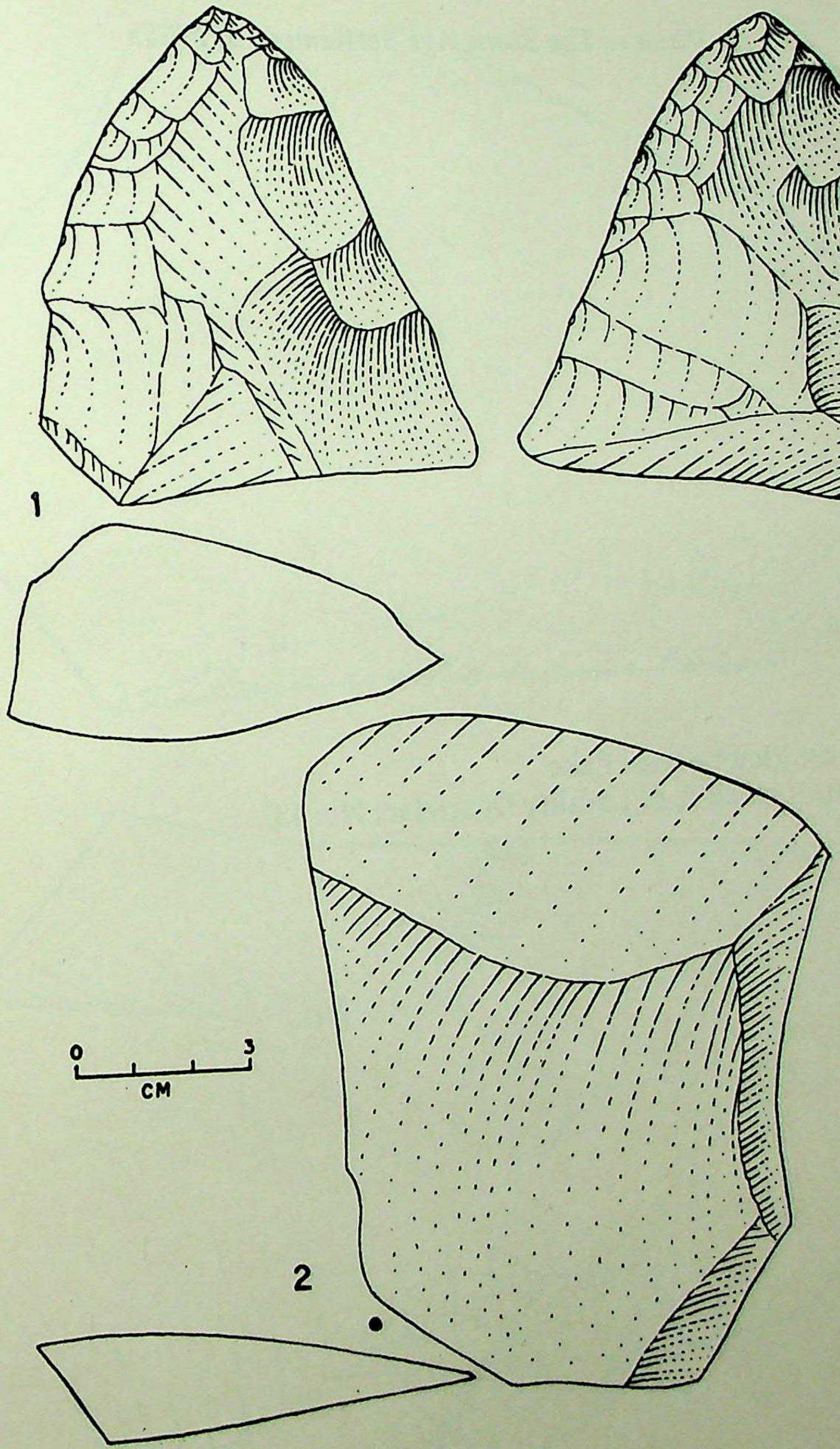

Fig. 43. Unfinished handaxe & cleaver.

Fig. 44

Cleaver on Victory-west flake
(find from Trench B, of Locality D, artefact No. 48).

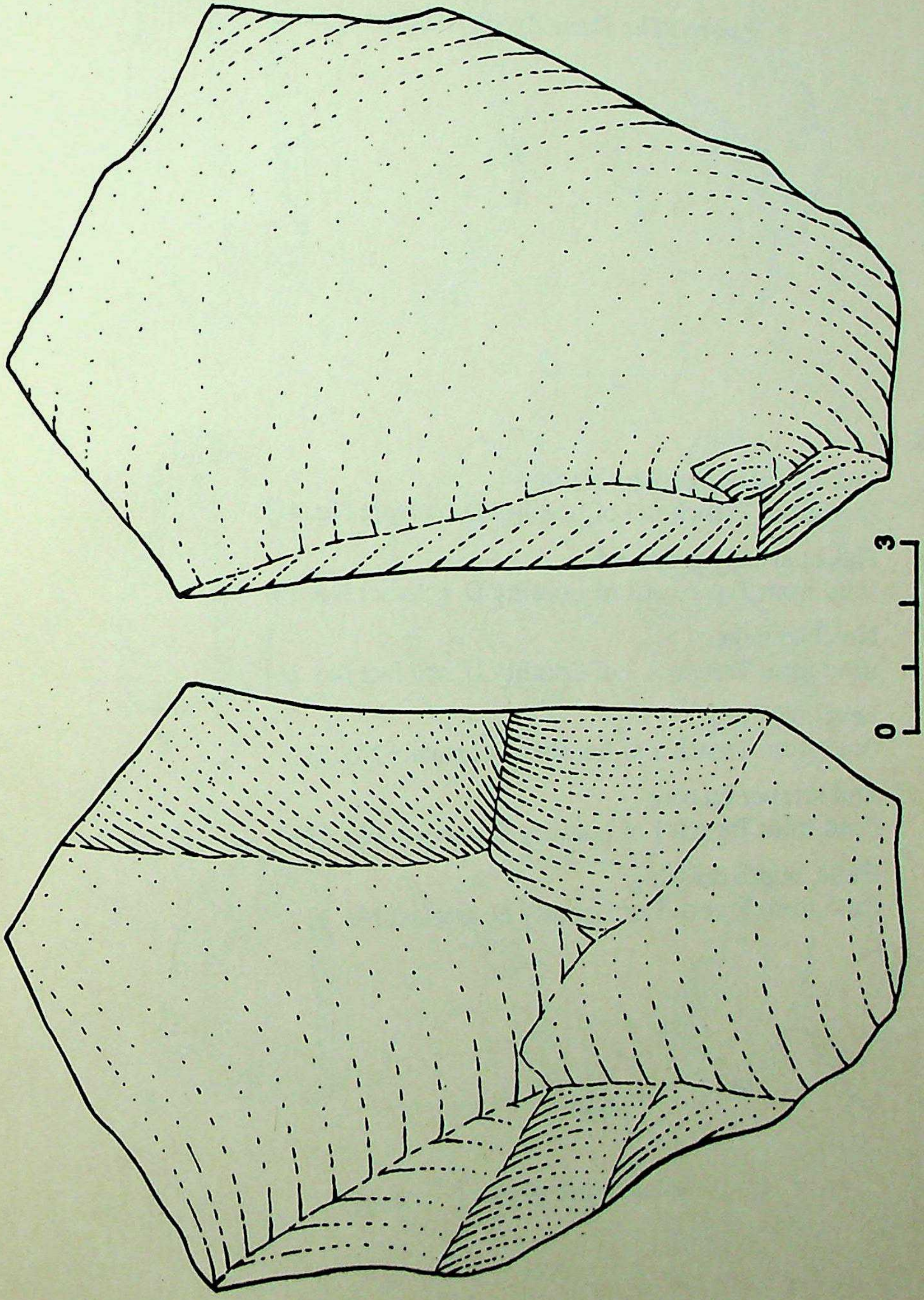

Fig. 44. Cleaver.

Fig. 45

1. End-scraper on broken blade
   (find from Trench A 1 of Locality D, artefact No. 47).
2. Flake partially prepared
   (find from Trench A 1 of Locality D, artefact No. 30).
3. Notched flake
   (find from Trench A 1 of Locality D, artefact No. 16)
4. Levallois Core
   (find from Trench 1 of Locality D, artefact No. 5)
5. End scraper on core
   (find from Trench 1 of Locality D, artefact No. 13).
6. Flake, biface dressing
   (find from Trench 1 of Locality D, artefact No. 3).

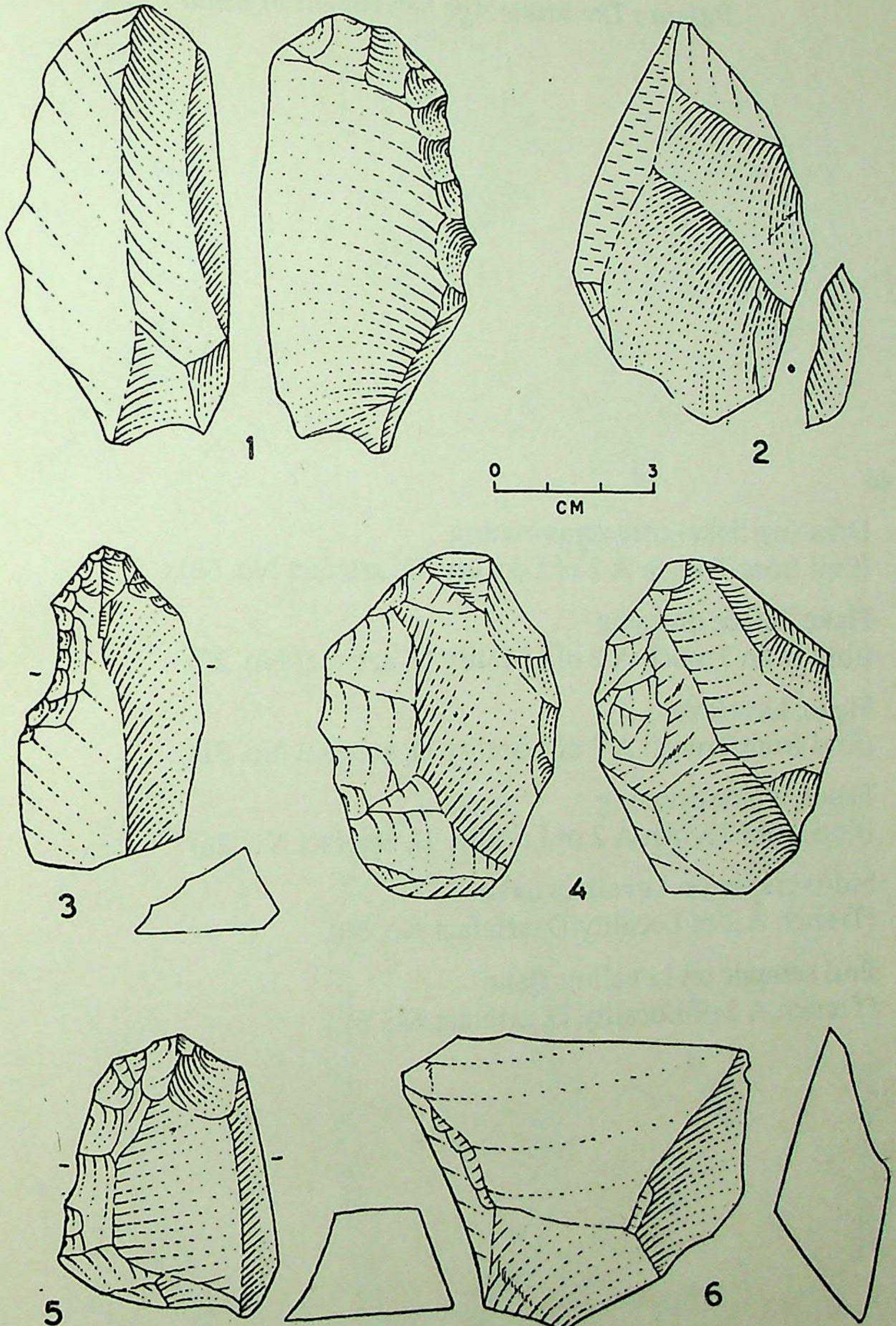
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Fig. 45. Flake & flake tools.

Fig. 46

1. Dressing flake–core rejuvinating
   (find from Trench A 2 of Locality D, artefact No. 30).
2. Flake, biface dressing
   (find from Trench A 2 of Locality D, artefact No. 27).
3. Flake, Levallois
   (find from Trench A 2 of Locality D, artefact No. 51).
4. Flake, biface dressing
   (find from Trench A 2 of Locality D, artefact No. 26)
5. Side scraper on Levallois flake
   (Trench A 2 of Locality D, artefact No. 50).
6. End scraper on Levallois flake
   (Trench A 2 of Locality D, artefact No. 6).

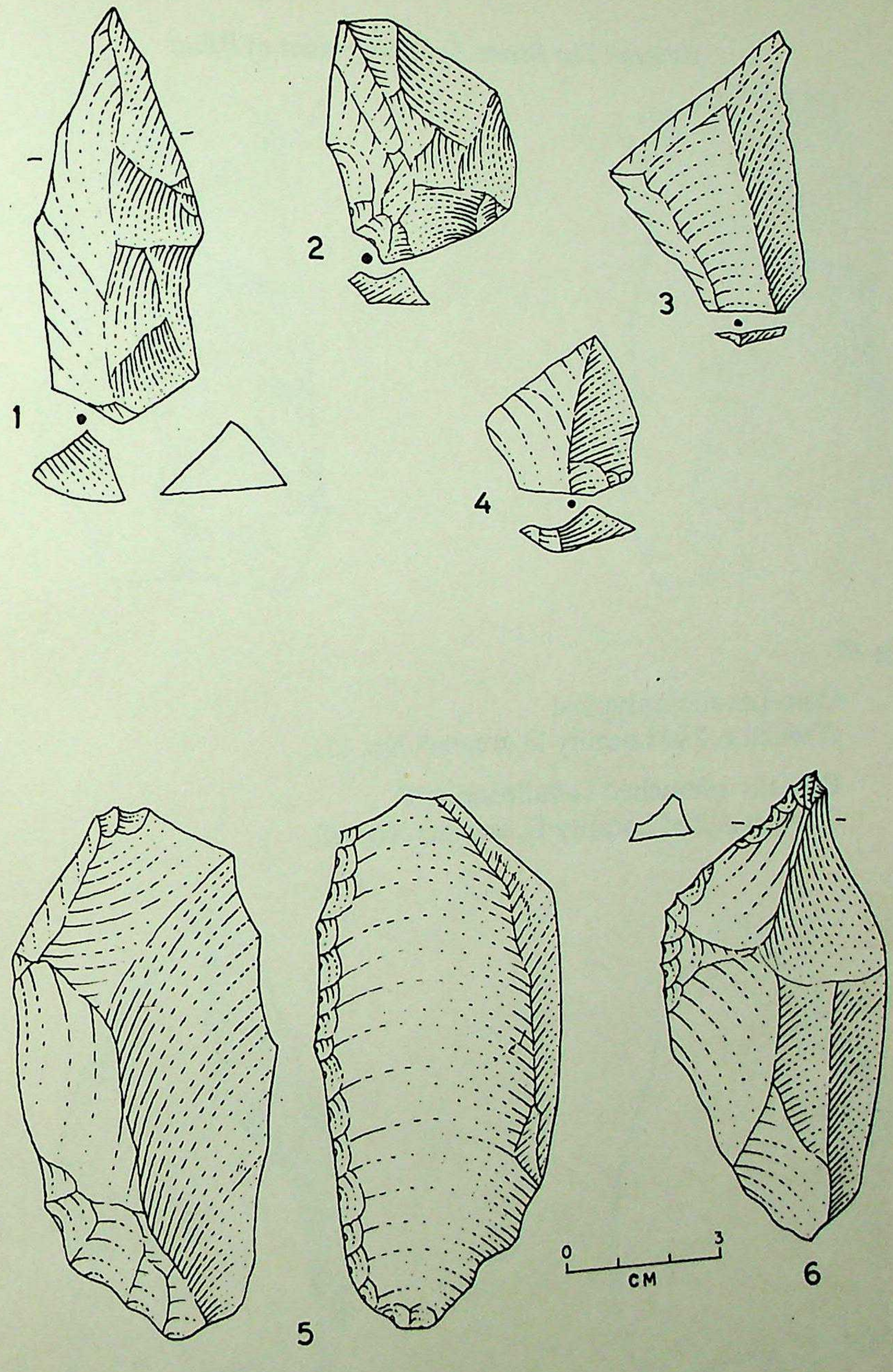
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Fig. 46. Biface dressing flakes & flake tools from Acheulian levels.

Fig. 47

1. Core-Levallois atypical
   (Trench A 2 of Locality D, artefact No. 12).
2. Partially retouched Levallois point
   (Trench A 2 of Locality D, artefact No. 18).

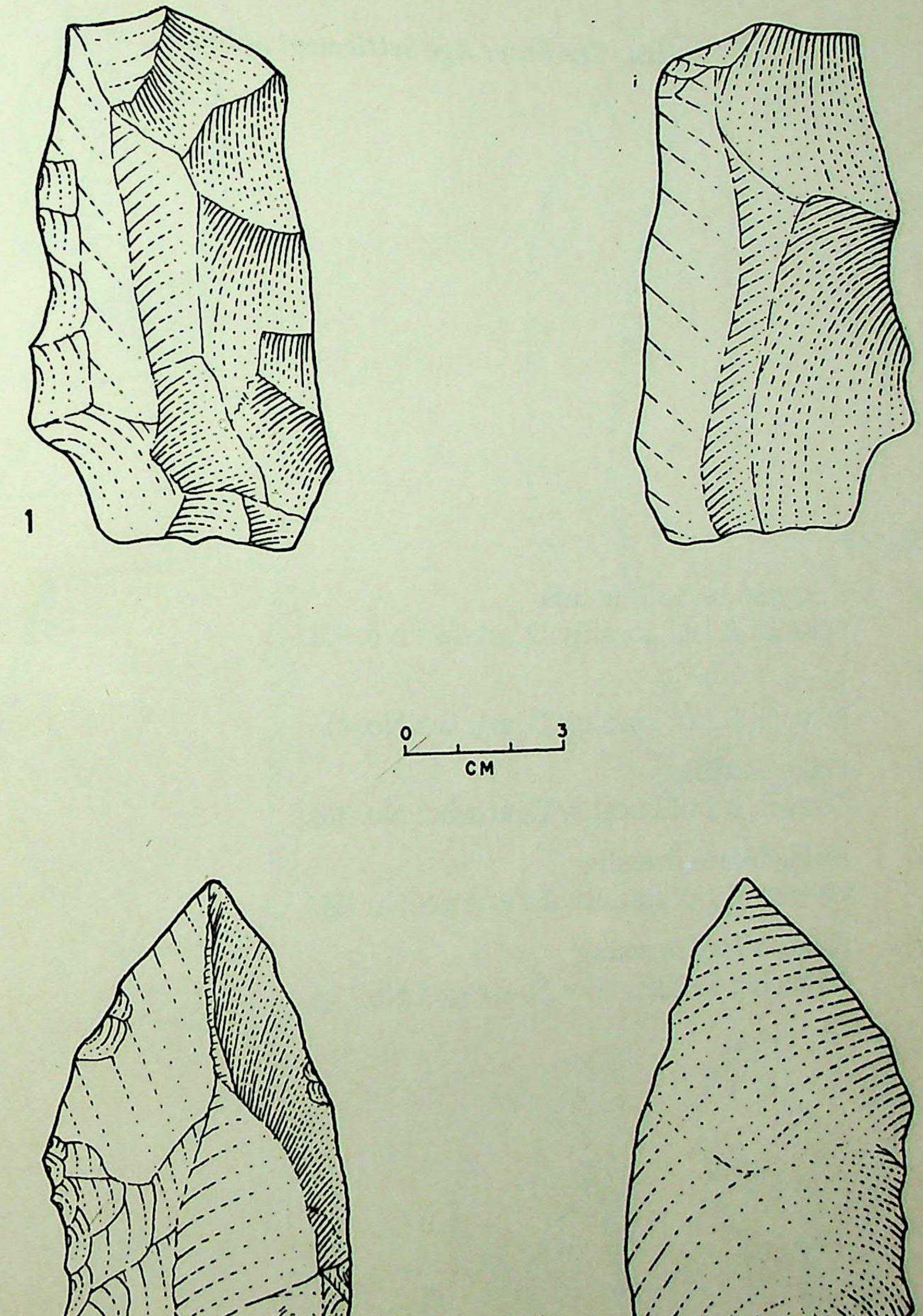

Fig. 47. Levallois core & Levallois point from Acheulian level.

Fig. 48

1. Chopper on split nodule
   (Trench B 1 of Locality D, artefact No. 93).
2. Blade
   (Trench B 1 of Locality D, artefact No. 4).
3. Flake, Levallois
   (Trench B 1 of Locality D, artefact No. 36).
4. Flake, biface dressing
   (Trench B 1 of Locality D, artefact No. 65).
5. Flake, biface dressing
   (Trench B 1 of Locality D, artefact No. 74).

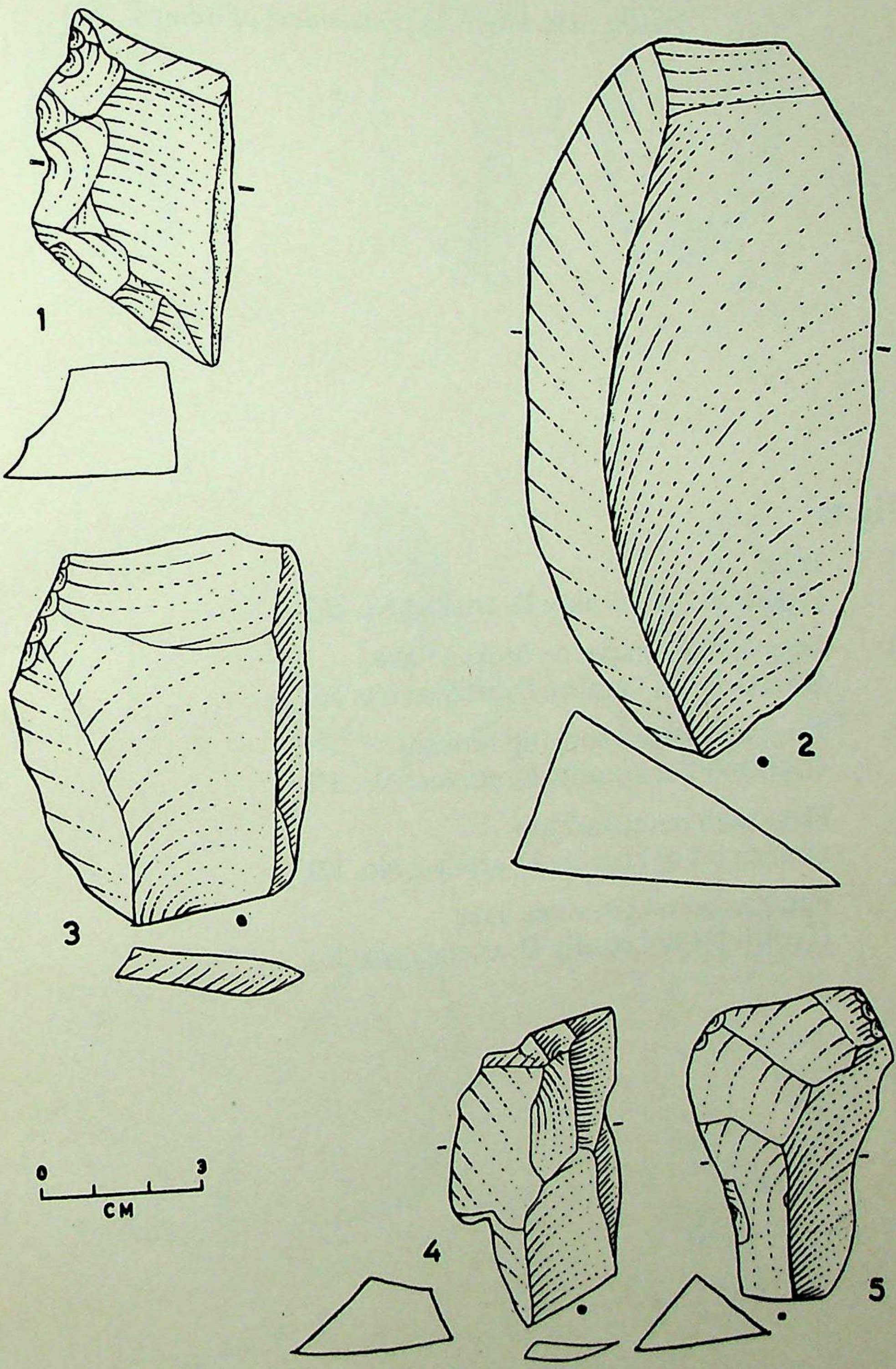

Fig. 48. Prepared flake & biface dressing flake from Acheulian levels.

Fig. **49**

1. Point
   (Trench B 1 of Locality D, artefact No. 67).
2. Double side scraper on broken flake
   (Trench B 1 of Locality D, artefact No. 86).
3. Point atypical on core (tip broken)
   (Trench B 1 of Locality D, artefact No. 33).
4. Flake with retouched top
   (Trench B 1 of Locality D, artefact No. 17).
5. End scraper on Levallois flake
   (Trench B 1 of Locality D, artefact No. 25).

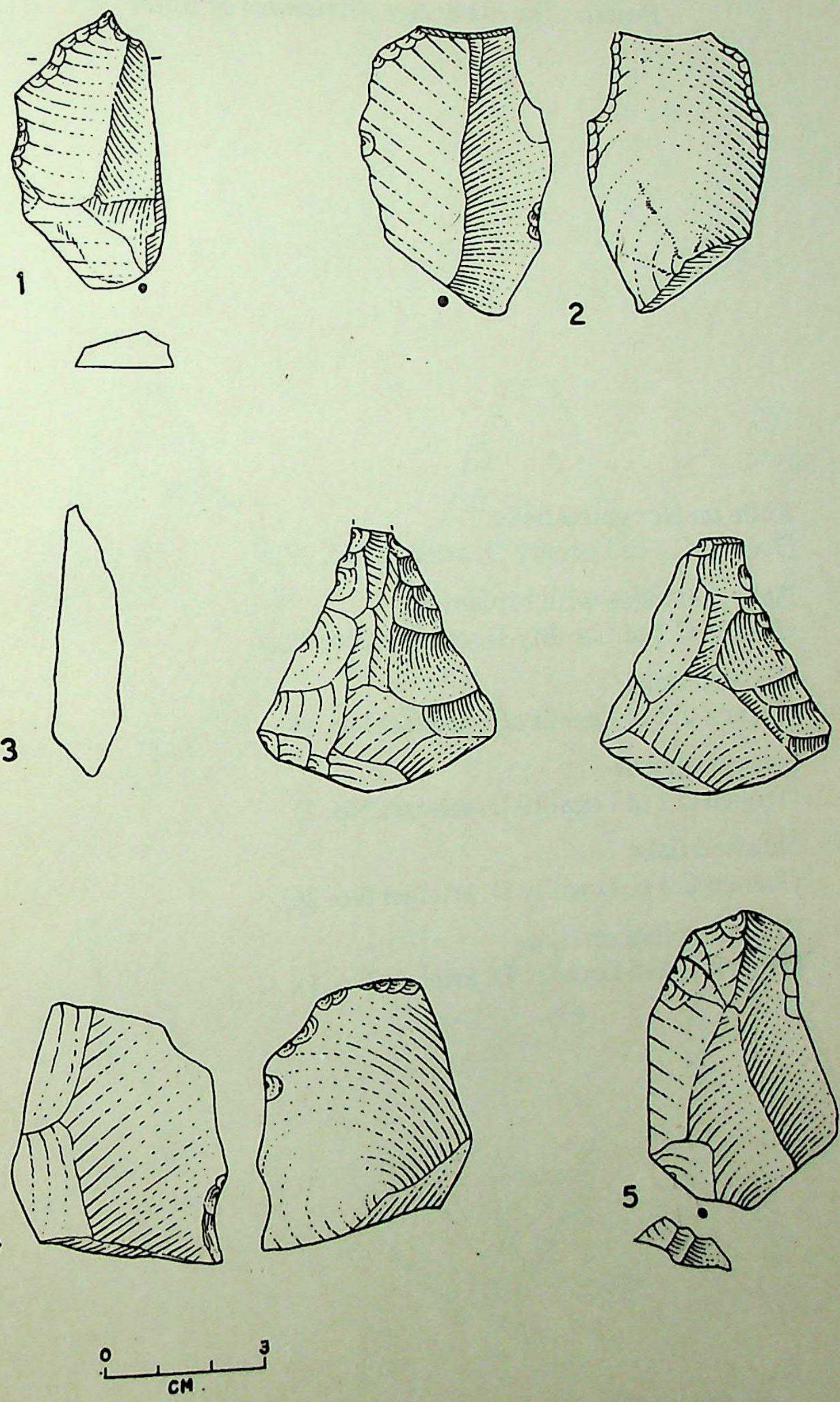

Fig. 49. Flake tools & atypical point from Acheulian levels.

Fig. 50

1. Knife on elongated flake
   (Trench C 1 of Locality D, artefact No. 27).
2. Flake, Levallois with broken tip
   (Trench C 1 of Locality D, artefact No. 96).
3. Notched flake
   (Trench C 3 of Locality D, artefact No. 84)
4. Scraper on core
   (Trench C 1 of Locality D, artefact No. 1).
5. Notched flake
   (Trench C 3 of Locality D, artefact No. 20).
6. Chopping tool on flake
   (Trench C 4 of Locality D, artefact No. 1).

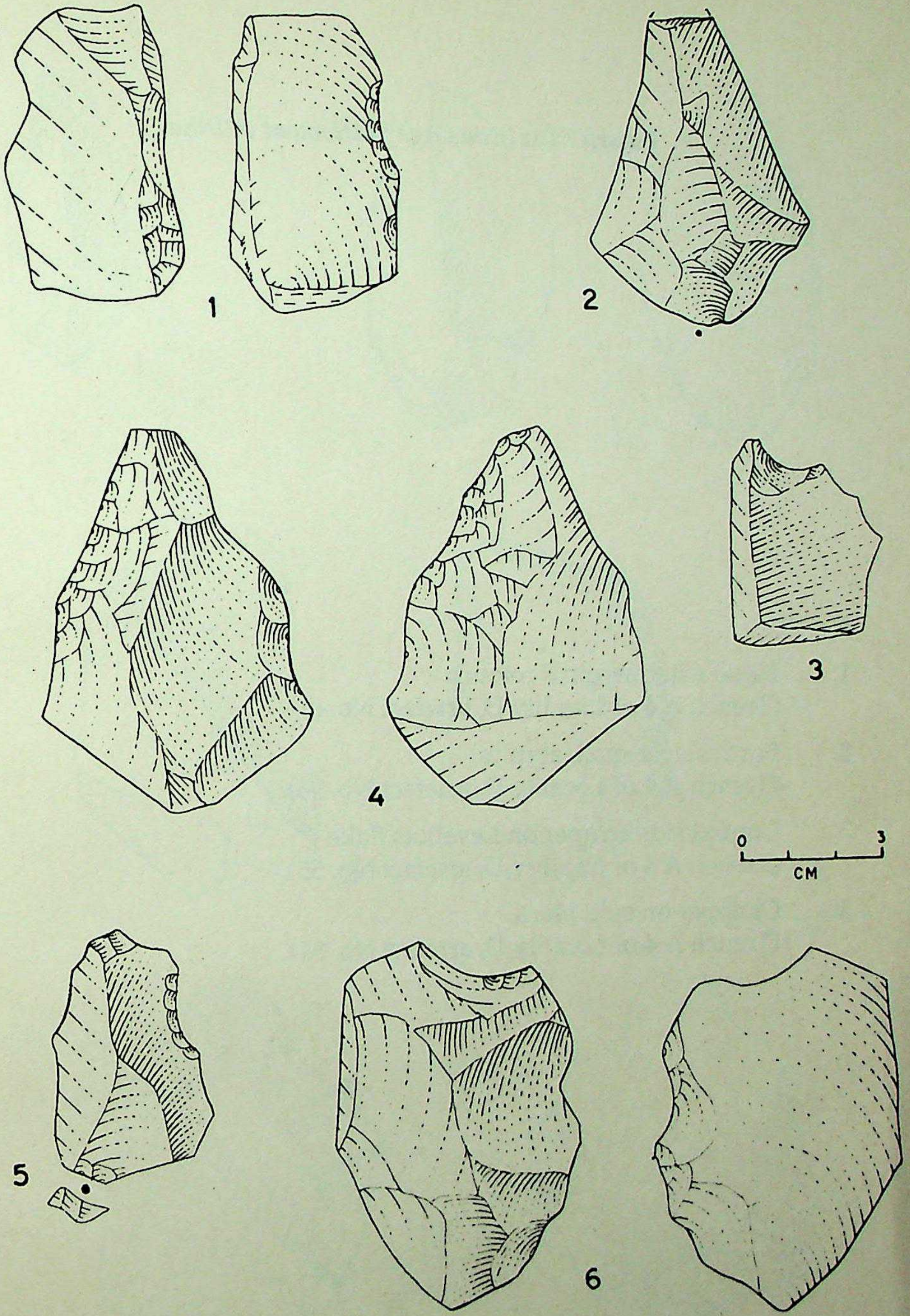
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Fig. 50. Flake scrapers from Acheulian levels.

Fig. 51

1. Blade with marginal retouch
   (Trench A 4 of Locality D, artefact No. 8).
2. Burin single spall, atypical
   (Trench A 4 of Locality D, artefact No. 96).
3. Convex side scraper on Levallois flake
   (Trench A 4 of Locality D, artefact No. 55).
4. Chopper on split block
   (Trench A 4 of Locality D, artefact No. 34).

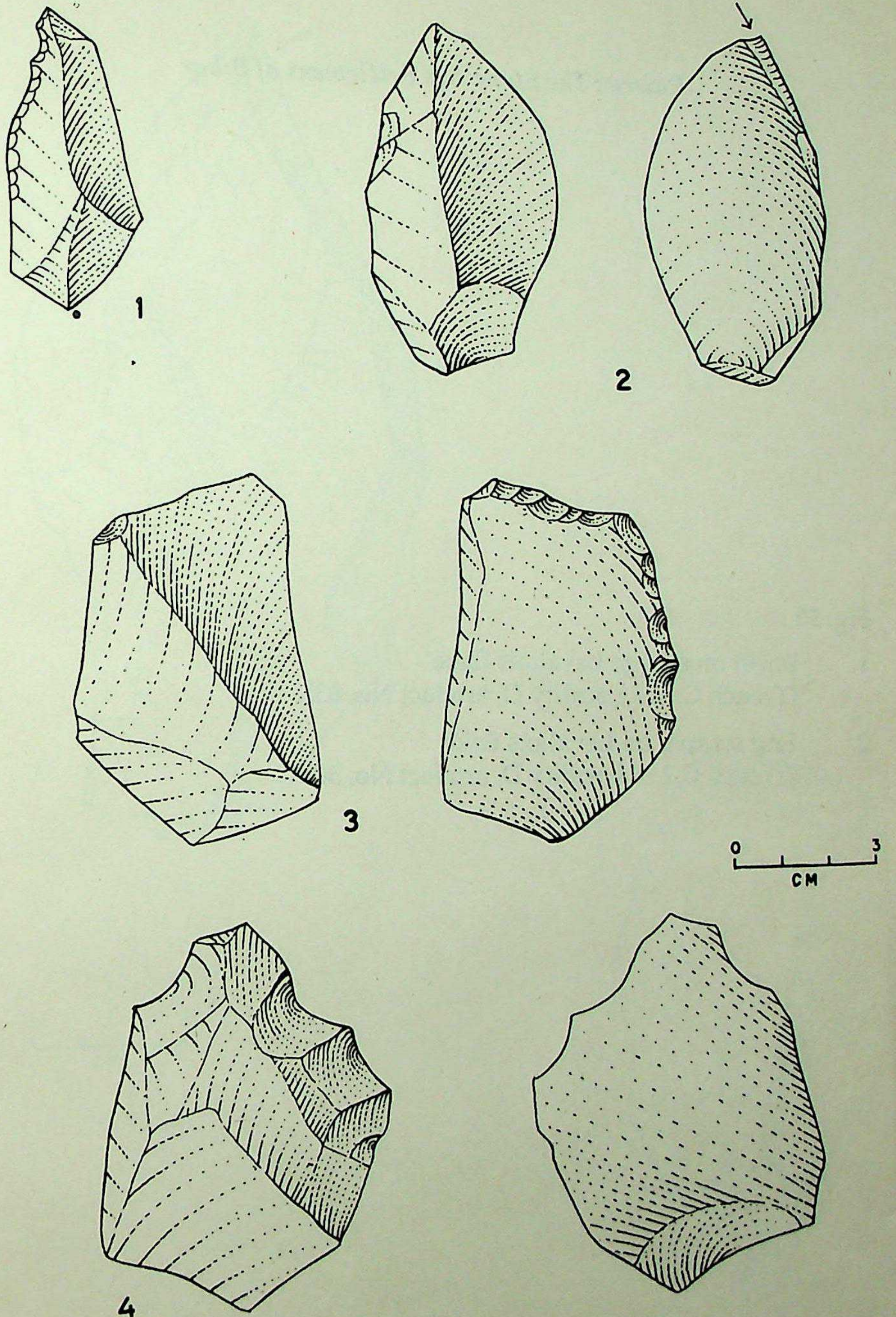

Fig. 51. Burin & scrapers from Acheulian levels.

Fig. **52**

1. Burin on a large Levallois flake
   (Trench C 2 of Locality D, artefact No. 83).
2. End scraper on Levallois flake
   (Trench C 2 of Locality D, artefact No. 30).

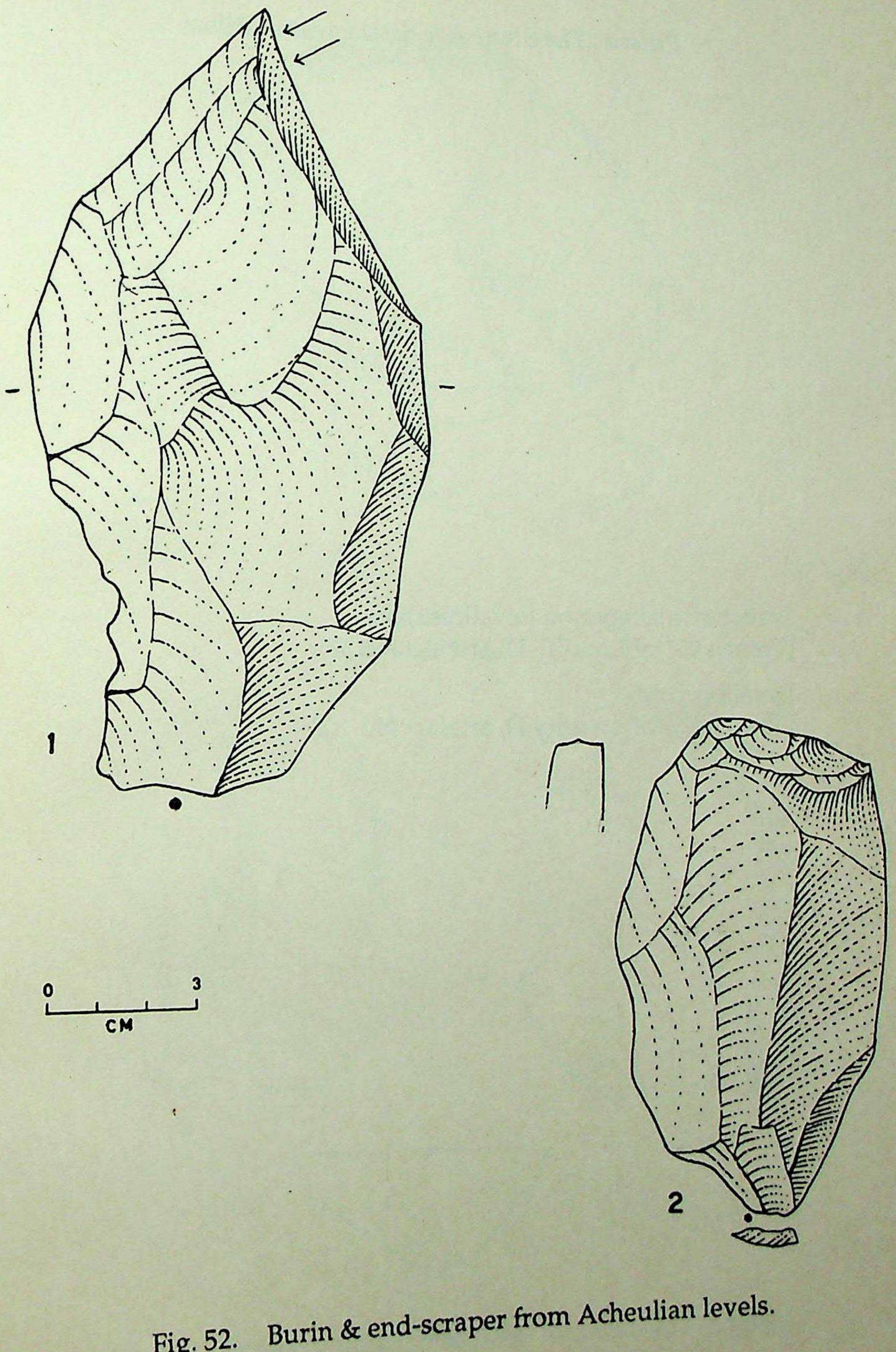

Fig. 52. Burin & end-scraper from Acheulian levels.

Fig. 53

1. Transverse scraper on Levallois flake
   (Trench C 1 of Locality D, artefact No.36).
2. Levallois core
   (Trench C 1 of Locality D, artefact No. 87).

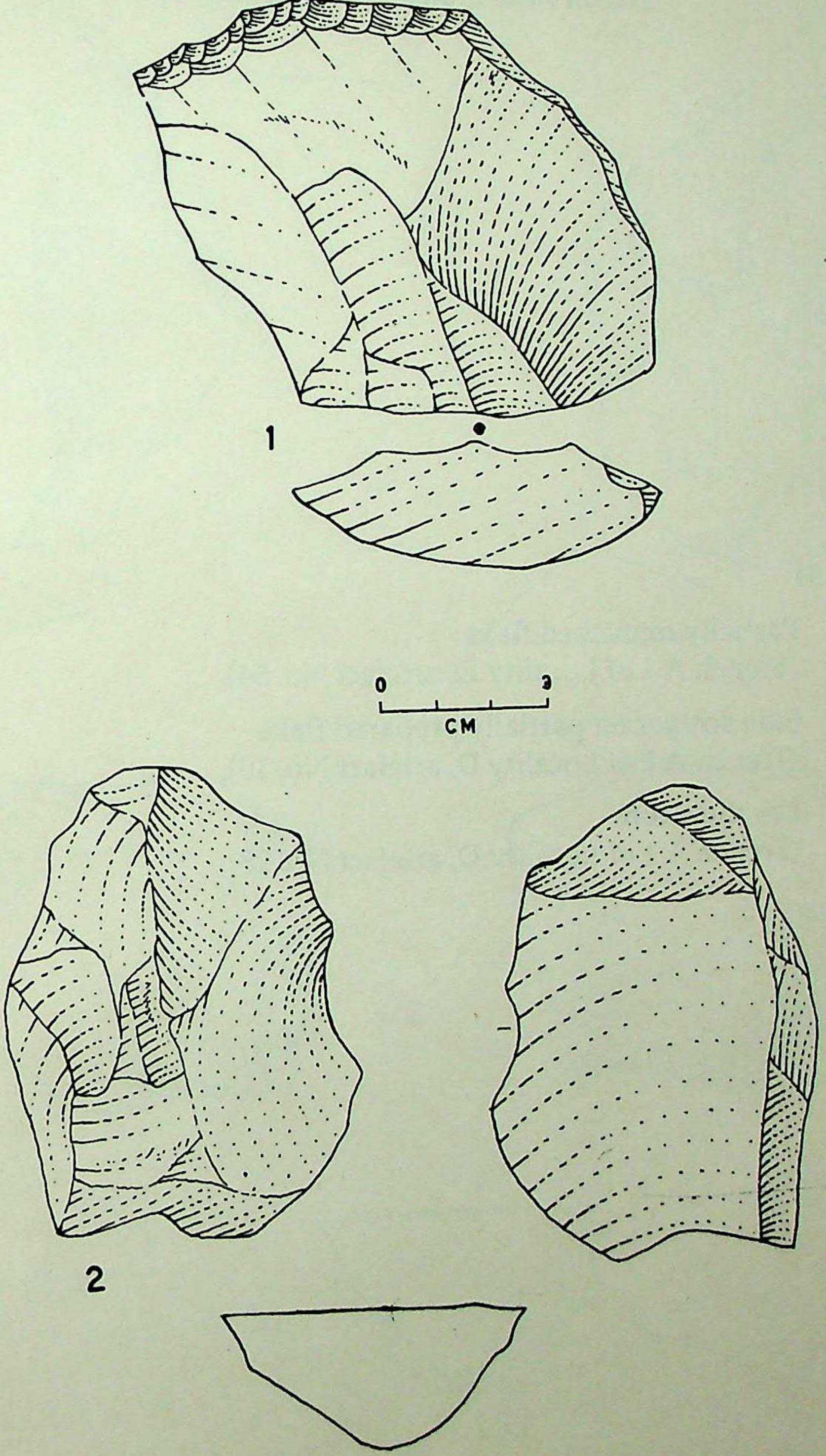

Fig. 53. Scrapers & Levallois cores from Acheulian levels.

Fig. 54

1. Partially retouched flake
   (Trench A 1 of Locality D, artefact No. 54).
2. Side scraper on partially prepared flake
   (Trench A 1 of Locality D, artefact No. 10).
3. Levallois core
   (Trench A 1 of Locality D, artefact No. 28).

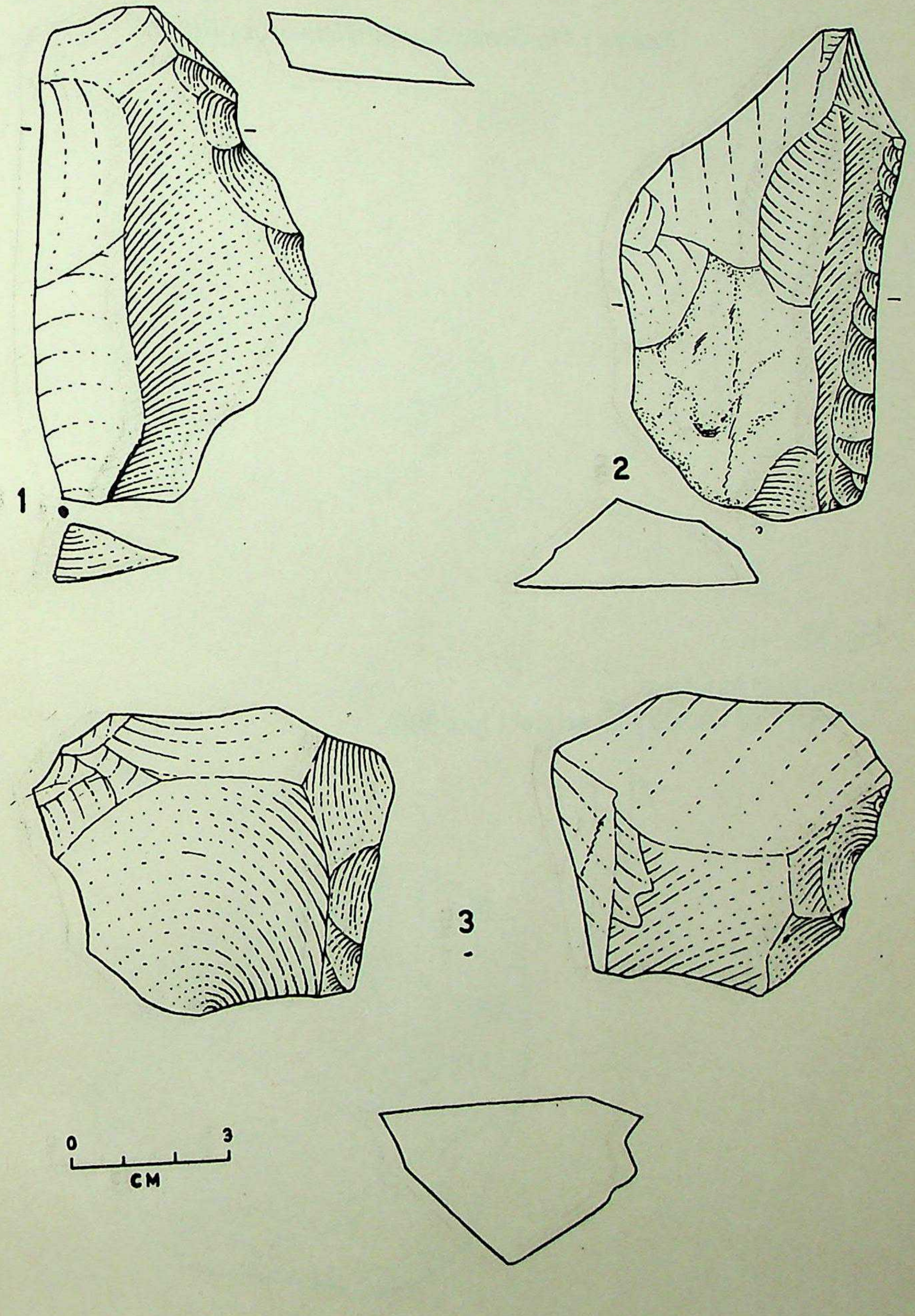

Fig. 54. Handaxe.

Fig. 55

Triangular handaxe
(Trench 1 of Locality C, artefact No. 588).

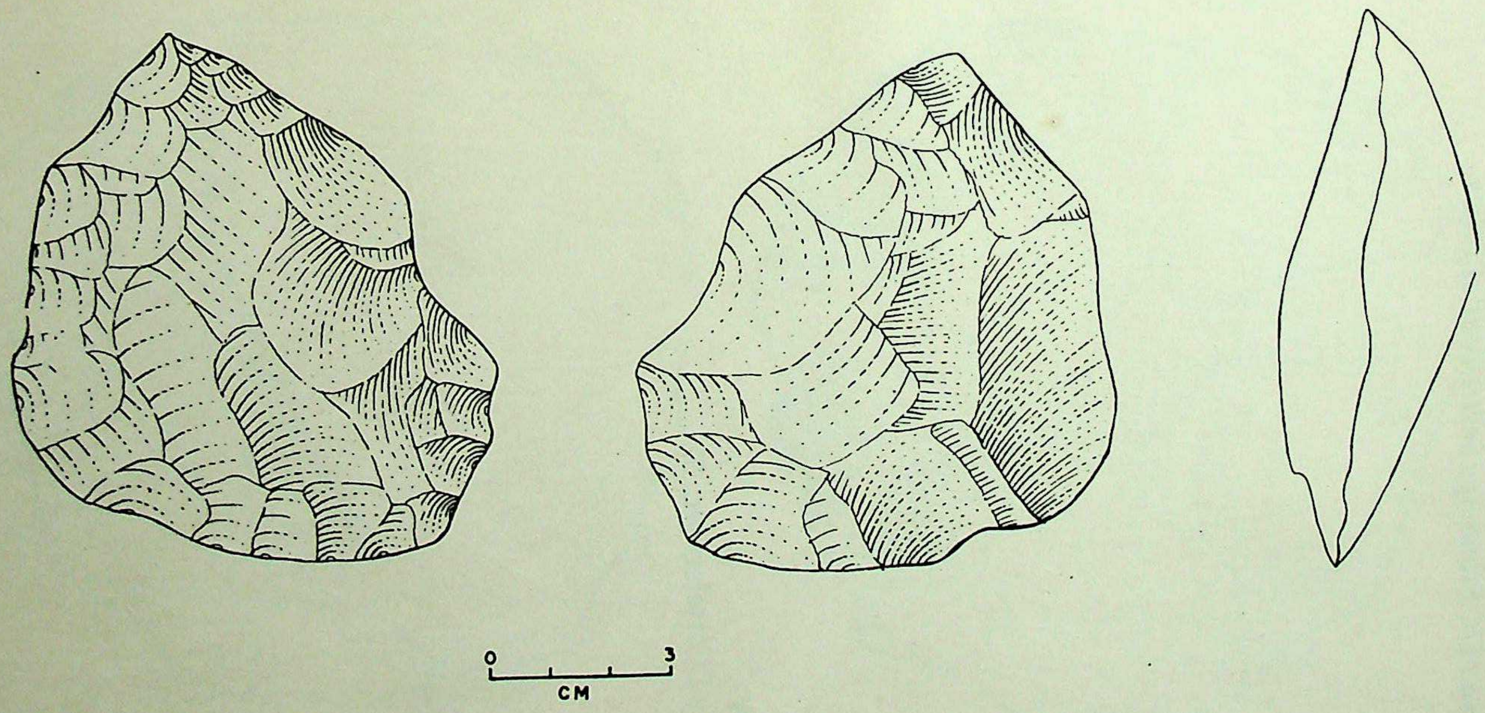

Fig. 55. Chopper.

Fig. **56**

Chopper on split block
(Trench A 3 of Locality D, artefact No. 3).

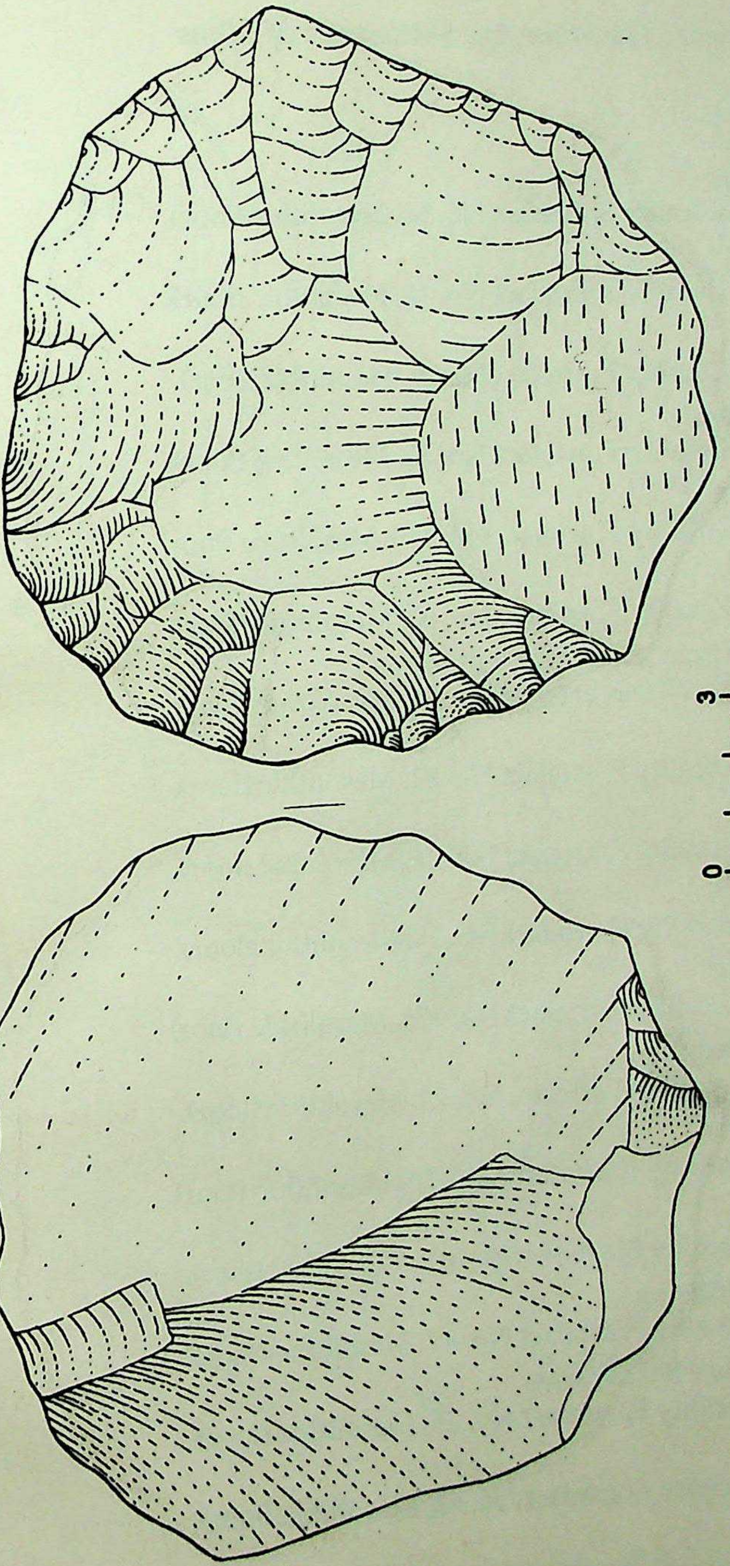

Fig. 56. Artefacts from Mesolithic levels.

Fig. 57

1. Backed bladelet
(Trench F 2 of Locality F, artefact No. 58, Mesolithic floor).
2. Lunate
(Trench F 4 of Locality F, artefact No. 12, Mesolithic floor).
3. Lunate
(Trench F 4 of Locality F, artefact No.29, Mesolithic floor).
4. Bladelet (broken)
(Trench F 2 of Locality F, artefact No. 46, Mesolithic floor).
5. Backed bladelet
(Trench F 2 of Locality F, artefact No. 175, Mesolithic floor).
6. Bladelet
(Trench F 2 of Locality F, artefact No. 62, Mesolithic floor).
7. Micro-gravette point (broken at bottom)
(Trench F 1 of Locality F, artefact No. 24, Mesolithic floor).
8. Bladelet
(Trench F 2 of Locality F, artefact No. 62, Mesolithic floor).
9. Bladelet core
(Trench F 1 of Locality F, artefact No. 26, Mesolithic floor).
10. Backed blade
(Trench F 1 of Locality F, artefact No. 10, Mesolithic floor).
11. Scraper on flake
(Trench F 2 of Locality F, artefact No. 176, Mesolithic floor).
12. Obliquely blunted point
(Trench F 2 of Locality F, artefact No. 23, Mesolithic floor).
13. Flake
(Trench F 2 of Locality F, artefact No. 170, Mesolithic floor).
14. Flake, dressing
(Trench F 4 of Locality F, artefact No. 61, Mesolithic floor).
15. Flake, primary dressing
(Trench F 4 of Locality F, artefact No. 49, Mesolithic floor).
16. Flake with pressure flaking scars
(Trench F 2 of Locality F, artefact No. 25, Mesolithic floor)
17. Flake, Levallois
(Trench F 4 of Locality F, artefact No. 63, Mesolithic floor).

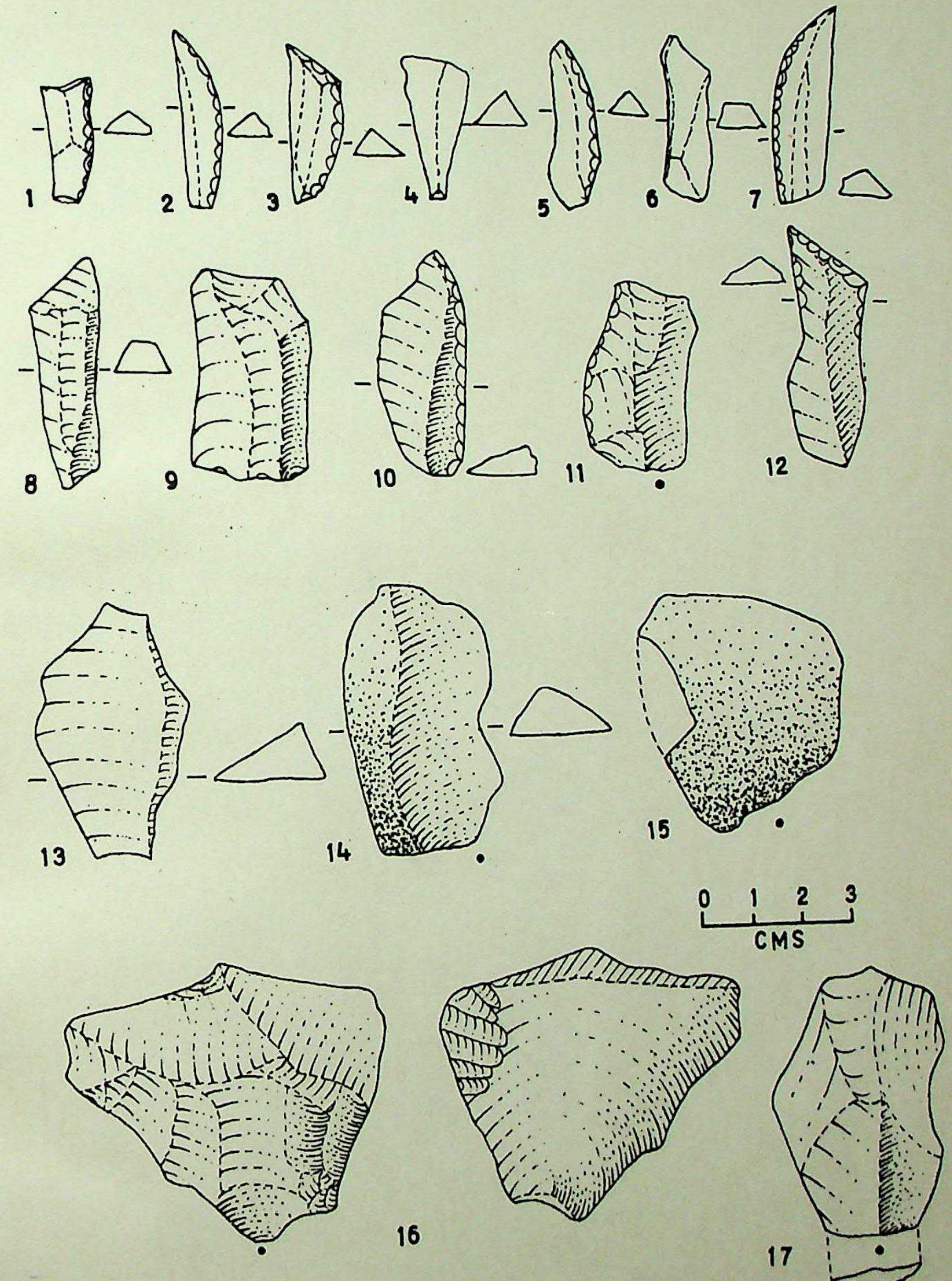
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Fig. 57. Artefacts from Mesolithic levels.

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